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THE LONG ROAD TO UNITY OF COMMAND

Dr. Louis Morton
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This article is based on research under a grant by the National Security Policy Committee of the Social Science Research Council.—Editor.

FEW today question the wisdom of unity of command. Elevated to a principle of war, it has been thoroughly absorbed into the doctrine of the services and is drilled into the minds of students at service schools at all levels.

But there was a time not so long ago when the idea of a single command over joint forces was considered the exception rather than the rule, when a proposal for unified command was sure to arouse strong feeling and to evoke stubborn resistance.

The struggle to secure acceptance of the principle of unity of command in joint operations was long and bitter. Tradition and pride in service die hard, and there were many questions that had to be settled before one service would accede to the command of its forces by an officer of another service. How long was the road to unified command, how different the problems that had to be solved along the way can be seen in a study of the efforts to coordinate Army-Navy action in joint operations before World War II. And an understanding of this long struggle may make more comprehensible the doctrine and the disagreements of our own day.

Half a century has been required to secure acceptance of the principle of unity of command in joint operations. So effective has it been and so well has it worked, that it now has become standard practice .

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Background

The Spanish-American War revealed many shortcomings in the organization, equipment, training, and doctrine of the Nation's military forces. Not the least of these were the problems involved in joint operations for overseas expeditions. The campaign in Cuba had emphasized the necessity for development of the principles and doctrine for such operations, and in 1905 the Army and Navy War Colleges took the first step toward meeting this need by preparing a set of "Rules for Naval Convoy of Military Expeditions."

In establishing these rules, or regulations, the planners at the two war colleges drew freely upon the long British experience with "conjunct operations" and on the shorter but significant record of American joint ventures. They found in both cases that the guiding principle had been "generous cooperation" between commanders of the Army and Navy, based upon a clear recognition of the special knowledge of each in his own sphere. When this rule was violated and one service placed above the other, the results, they found, had invariably been unhappy. Thus they attributed the failure of the British expedition against Cartagena in 1741 to the unwillingness of the two commanders to work together toward the common end, and of the first expedition against Fort Fisher in the Civil War to General Butler's disregard of Admiral Porter's advice in the disembarkation of his troops. In contrast to these failures, the planners pointed to the long history of British success, and to the American experience in the second attack on Fort Fisher, when there had been the fullest cooperation between General Terry and Admiral Porter.

The war college planners found in British regulations the clearest general exposition of the principle of cooperation as it applied to coordination of land and sea forces in joint operations. These regulations contained a specific injunction against assumption of command by an officer of the Army and Navy, no matter what his rank, of the forces of another service except under special authority from the Government. There was also a clear distinction in British regulations between rank and command, and although all officers were entitled to the prerogatives of their rank with regard to quarters and similar matters, they did not assume command for that reason. Aboard ship, officers and troops alike, no matter what their rank, were subject to the laws and regulations of the Royal Navy and under the command of the ship's captain and the senior naval officer present.

Rules for Naval Convoy

The "Rules for Naval Convoy of Military Expeditions" drawn up by the Army and Navy War Colleges in November 1905 embodied these principles and met ready acceptance by each of the services. The rules then went to the Joint Board, the agency established only a few years earlier to consider problems of common interest to the Army and Navy. Early in 1906 the board appointed a committee consisting of Major General J. C. Bates, Assistant

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Chief of Staff of the Army, and Captain Richard Wainwright, United States Navy, both members of the board, to study the rules and to recommend whatever revisions it thought necessary.

The points of particular concern in the Rules of Naval Convoy were those involving the delineation of responsibility between the Army and Navy. Very carefully Bates and Wainwright reworded the key paragraphs to clarify the relationship between the troop commanders and the naval officers in the expedition. The general effect of these revisions was to enhance the authority of the naval convoy commander and his representatives aboard the individual vessels. The Joint Board accepted the revised rules at its meeting on 23 February 1906, and after approval by the Secretary of War, the Secretary of Navy, and then the President, the "Rules for Naval Convoy of Military Expeditions" were published as General Orders by the Army and Navy.

Publication of the Rules for Naval Convoy gave the services for the first time a set of regulations governing the conduct of joint operations. Responsibility for the protection and conduct of the expedition at sea was assigned to the Navy which designated a senior naval officer as convoy commander and junior officers for each of the vessels in the convoy. The convoy commander controlled the formation and movement of the vessels and exercised authority through the naval officers aboard the transports of Army troops and ships' crews insofar as convoy regulations and ship rules were concerned. At the target area the authority of the convoy commander was limited to covering the landing with naval gunfire and providing assistance to get the troops ashore.

The Army had responsibility for all other phases of the operation. It controlled the time of sailing, and the time, place, and order of landing. The Army commander of the expedition, after consultation with the convoy commander, had the power to change the destination of the convoy during the voyage if circumstances made this necessary in his judgment. He remained in command of his forces at sea, and in all essential respects was the commander of the expedition.

Command Ashore

The adoption of these rules in 1906 was not the end but rather the beginning of a long dispute over command. Although the rules had carefully staked out the authority of the Army and Navy in joint operations, they left untouched the entire question of command of joint forces ashore. There was no doubt that naval officers would not command such forces in ground operations, but what of the Marines? Marine Corps officers had both training and experience in ground warfare, and in many cases were presumably as competent to command certain types of operations as most Army officers.

Article of War 122 recognized this and provided that the senior line officer, no matter what his service, would command. But War Department general orders, although citing the relevant article or war, specifically prohibited Marines from commanding Army troops under any circumstances, except on direct orders of the President. Marine Corps officers detached for service with the Army, according to the War Department order, "will neither be assigned nor permitted by commanding generals or other officers of the Army to command troops of the Army on Army transports or elsewhere."

The view of the Solicitor General, when he was asked for a ruling in October 1909, supported in general the position of the War Department. The voluntary joining of forces of separate services into a single detachment for joint operations, the Solicitor General pointed out, was not an act of incorporation but rather of cooperation. It did not, therefore, in his judgment, constitute authority for one service to as-

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sume command of all the forces engaged in the common enterprise. The only exceptions were ceremonials and parades, where the Army took precedence by virtue of its seniority, and in cases where the forces of one service were detached by the President for duty with another service.

The Joint Board under Admiral Dewey's vigorous leadership did not agree with the Solicitor General. It did not question the seniority of the Army or the right of Army commanders to precedence in ceremonials and parades on shore. But it thought the view of the Solicitor General in operational matters entirely unsatisfactory, and found existing regulations on the subject confusing.

Operations of a joint nature involving the forces of more than one service, specifically the Army and Marines, the board asserted, must be subject to the orders of a single superior. This superior, it further maintained, should be the senior officer of the line of the Army in command of the Army detachment. He it was, the Joint Board declared, who "should command the whole and have authority to issue such orders to the officers in command of the naval and marine detachments while on shores as may be necessary for the success of the enterprise engaged upon." Mere cooperation between the services would not suffice, it declared, and divided responsibility was an invitation to failure.

The Joint Board also suggested further revisions in the rules for naval convoys. Discharge from the transports to the boats, which had formerly been a responsibility of the troop commander, the board now assigned to the Navy, thus giving that service control over all operations until the troops and supplies were ashore. The Navy also acquired as a result of this revision further rights of inspection before sailing, and control over that portion of the beach across which it would have to unload the boats, or load them in the event of withdrawal. Thus although the Army retained responsibility for the time, place, and order of landing, the authority of the Navy—which had heretofore been limited to actual operation of the vessels at sea and the landing boats on their run to shore—was extended to include almost every phase of the expedition from the time it assembled until the troops had been landed.

Legislative Action

The recommendations of the Joint Board, both with regard to command and to the Rules of Naval Convoy were readily accepted by the two service secretaries and approved by the President. No further action was necessary on the rules of naval convoy, but legislative action would be required to effect the change in command recommended by the Joint Board. A proposed bill containing the identical wording of the board's recommendation was quickly drafted in the Office of the Judge Advocate General, and on 11 January 1911 the President recommended its passage in his annual message to the Congress.

There seemed little doubt that the required legislation would receive the approval of Congress. It had the backing of the President, the Secretary of War, the Secretary of the Navy, and the Joint Board, and whatever opposition existed did not seem powerful enough to defeat a bill so strongly supported. Indeed, the measure was promptly introduced into both Houses and passed the Senate with little difficulty. But in the House, where the Marine Corps usually found its greatest support, it met a different reception and failed of passage.

The victory was only temporary, but it gave an opportunity to those who opposed the bill to rally their forces. By 1913, sentiment in the Navy had begun to swing to the other side. The Chief of the Bureau of Navigation, one of the most powerful officials in the Navy Department, saw in the proposed command arrangements a real

danger to the naval service. Under the bill then pending, he pointed out, naval forces of any size operating on shore might come under the control of officers not qualified by experience or training to command them properly. Passage of the bill, he concluded was not in the best interests of the Navy and should be opposed.

Complete Review

The opposition of the Chief of the Bureau of Navigation sparked a complete review of the problem of joint command by the General Board of the Navy, senior advisors to the Secretary on all major problems affecting the Department. In its review of the proposed legislation, the board asked two questions:

1. Did past experience justify the view that Army officers should command detachments of the Navy and Marine Corps ashore, irrespective of rank?

2. Would such an arrangement contribute to harmonious relations between the services and produce a more effective method for the conduct of joint operations than already existed?

To both questions the General Board gave a negative answer. With regard to the first, the naval planners found as the war colleges had pointed out earlier that joint operations traditionally had been conducted under the principle of cooperation rather than unity of command. The United States and Great Britain, they observed, had always avoided placing one service above the other with the result that in the four major wars during the previous 100 years' relations between the Army and Navy had been marked by "a harmony of operations." Based on past experience, therefore, the General Board did not believe it was "either necessary or advisable to make any change in the cooperation principle which now obtains in joint operations on shore."

The board did not believe, either, that the proposed legislation to give command to the Army would promote harmony between the services or increase the likelihood of success in joint operations. Most naval officers, it pointed out, were graduates of the United States Naval Academy, had wide experienee in command, and a broad knowledge of military as well as naval arts. Moreover, every combat ship had in its Marine complement a completely organized landing force equipped and trained to fight as infantry and artillery. Thus naval officers, by the time they reached a grade equivalent to field grade in the Army, were thoroughly trained and experienced in the tactical employment of forces engaged in landing operations.

Marine Corps officers not only shared the education, background, and experience of their naval colleagues, but were trained primarily in the conduct of infantry operations. In their schools, observed the General Board, Marine Corps officers studied the same problems as Army officers and took the same examinations. For "all 'round training, education, chances of practical work and instruction, ability, self-reliance," said the board, Marine officers were the equal man for man in every respect to Army officers in the same grade.

Additional Argument

Another strong argument against a blanket rule giving Army officers command of mixed forces was the fact that the percentage of regulars in the Navy and Marine Corps was much higher than in the Army. Moreover, in time of war the General Board pointed out the bulk of the Army would be composed of militia and volunteers whose officers, although limited in experience and military knowledge, would hold high command by virtue of rank and seniority. Even the Army had recognized this as a serious problem and had taken precautions to limit the command of such officers. Was it reasonable, therefore, asked the General Board, to expect the Navy and Marine Corps to place their units under these officers?

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It did not doubt that general officers of the Army were better qualified than naval officers and Marines to handle large units, and readily agreed that when there was an Army general officer in command on shore, operations should be under his direction. But it seriously doubted whether militia, volunteers, or junior officers of the Regular Army were any more competent than corresponding officers of the Navy and Marine Corps for tactical command. "The present procedure, cooperation between the land and sea forces, with its limits as to authority and command not too well-defined, may not be ideal"; said the General Board, "but it had worked well in the past and promises to work well in the future."

Although it preferred the time-honored system of cooperation, and, like the Chief of the Bureau of Navigation, opposed the pending legislation, the General Board did not take an unyielding position. It was quite prepared to accept as a general rule the principle that command on shore of mixed detachments should be vested in an Army officer if he was the senior line officer present. But that was as far as the board would go, and it recommended that the legislation to give command to an Army officer, whatever his rank, over Navy and Marine officers of higher rank and possibly wider experience be opposed by the Navy.

In the face of this strong opposition from his senior advisors, Secretary of the Navy Josephus Daniels suggested to his Army colleague on 5 January 1914 that the Joint Board be asked to reconsider its earlier recommendation—made in October 1910—in support of the bill then pending before Congress. The Secretary of War agreed and later that month the entire problem was referred again to the Joint Board.

Almost a year went by without action. The Joint Board had run into trouble with the President and its meetings had been temporarily suspended. All business of the board, therefore, was suspended until meetings could be resumed.

Another Complication

During this waiting period a complicating factor was introduced into the command problem by the proposal of Major General William H. Carter, Commanding General, Hawaiian Department, early in March 1915 that a unified command be established in Hawaii and that this command be vested in the Army. Such a move was necessary, argued General Carter, in the event of an emergency in which the islands would be isolated from the mainland by enemy attack. If this happened, Carter declared, there should be a single authority to control all military and naval forces ashore, as well as that portion of the fleet (including submarines) that would be required to oppose enemy landing and conduct the defense of the islands "in a harmonious manner." In such an event it would be necessary also, Carter pointed out, to establish martial law in the islands and this could not be done under the principle of cooperation.

To General Carter it was evident that only the Army commander could carry out these functions in an emergency, and he recommended that the War and Navy Departments publish the necessary regulations providing for unity of command in Hawaii. It would be desirable, also, he thought, if the President would issue definite instructions in the matter so that the defense of Hawaii would not be dependent upon "the state of mind or courtesy which may prevail between the superior officers."

Thus when the Joint Board met again in mid-October 1915 it had two items before it dealing with the subject of joint command. In accordance with its usual practice, the board appointed a subcommittee to study the problem, naming as members Brigadier General E. M. Weaver, Chief of Coast Artillery and Captain H. S. Knapp, junior naval member of the

board. The subcommittee met only briefly, for it quickly became evident that the two officers could not agree on a report and that each would submit his own views separately to the board. Knapp's position was that "even half-hearted cooperation . . . may give a better result than the best intentions of an autocratic senior necessarily ignorant of the technique of the other service." It was impossible, he believed, to frame a set of rules that would enable one service to command the other in its own element. The only practical course was to draw up special instructions for each particular case as it arose. For the rest, the principle of cooperation should govern, and cooperation, Knapp observed, "is a thing that cannot be created by orders." In the final analysis it depended on the quality and disposition of the respective commanders chosen.

Army Position

General Weaver argued the opposite position persuasively. The principle of single control and unified direction of operations on land by an officer of the Army, he maintained, was both necessary and desirable. However, he favored a compromise and thought that the General Board in its study of the problem had made several valuable suggestions that might produce a solution. One of these was that general officers of the Army were better qualified than officers of the Navy and Marine Corps to direct large bodies of mixed troops on shore; the other was that, for smaller forces, the officer designated to command should be an Army officer senior in rank to naval or Marine Corps officers. Although Weaver did not say so, it followed that if the senior line officer present was from the Navy or Marine Corps, then presumably that officer would assume command.

On the question of command in Hawaii, Knapp had argued against the rule that the commanding general should be senior to the naval officer commanding the Pearl Harbor base on the ground that it would be inefficient. General Weaver agreed that this would be true under ordinary circumstances, but not if communications with the islands were cut during war. In that event, unified command would not only be necessary, but also entirely consistent with the General Board's views about placing general officers in command of operations ashore. Purely naval operations would not be affected by such an arrangement, and defense of the islands when they were threatened by invasion would become, in fact, defense of a fortress.

The Marines, too, had their say. Although they had no representation on the Joint Board or its subcommittee, the commandant of the corps apparently received a copy of Weaver's report and he passed it on for comment to his principal assistant, Colonel John A. Lejeune. Lejeune disagreed "emphatically" with Weaver and the General Board on two points: first, that general officers of the Army were necessarily better qualified than officers of the Navy or Marines to handle large bodies of mixed troops; and second, that the Army officer senior to the Navy and Marine Corps officers in any joint force should command in every case. "It is, I believe, an incontestable fact," Lejeune declared, "that officers of the Marine Corps, grade for grade, are as a rule as well-qualified for command on shore as are officers of the Army."

In support of his contention, Colonel Lejeune turned to the recent history of the corps. Experience in the Boxer Relief Expedition, the Cuban Pacification, and at Veracruz, he declared, gave ample proof of the ability of the corps and its efficiency in joint operations. At Veracruz, for example, a brigade of marines had been detached for service with the Army and had served with it for about seven months. During that time there had been no unfavorable criticism whatsoever of the Marine Corps by Army officers. On

the contrary, Lejeune declared, Army officers from the expedition commander down had been practically unanimous in their praise of the efficiency and ability of officers and men of the brigade. There was no doubt in Lejeune's mind either that those Army officers who had served in that campaign would admit "that under the acid test of actual experience in the field, Marine officers, as a class, were in no respect inferior to officers of the Army as to their qualifications to exercise command on shore."

Like Captain Knapp and other naval officers, Colonel Lejeune believed firmly that relations between naval and military commanders in joint operations should be based on the principle of cooperation, as it had been in the past. He could see no reason for changing a practice that had worked well in Great Britain and the United States for centuries, and thought that whatever advantages might be derived from unified command would be more than offset by the disadvantages.

Revised Articles of War

When the Joint Board met late in April 1916 to consider the separate reports of the members of the subcommittee, the problem of command had, in a sense, already been taken out of its hands. Under consideration by Congress at the time was a proposed revision of the Articles of War which stated, in the 120th Article, that:

When different corps or commands of the military forces of the United States happen to join or to do duty together the officer highest in rank of the line of the Regular Army, Marine Corps, forces drafted or called into the service of the United States, or Volunteers there on duty, shall . . . command the whole and give orders for what is needful in the service, unless otherwise directed by the President.

This statement, which had already passed the Senate before the Joint Board meeting in April, was a complete reversal of the principle laid down by the Joint Board in 1910 and embodied in the legislation still pending before Congress. The Joint Board, therefore, deferred action until final congressional decision, which came with the passage of the revised Articles of War at the end of August 1916.

Between 1916 and 1919 the Joint Board met only twice, and then only to consider relatively unimportant problems. But after its reorganization in July 1919, it again turned its attention to the problems of joint command. There seems to have been no other reason for this review than the desire to remove the matter from the calendar of the Joint Board. Moreover, the question of command in Hawaii had never been settled, and there were some who still believed that more specific regulations and rules were required to govern joint action in coastal defense as well as overseas expeditions.

During the late summer and early fall of 1919, the newly established Joint Planning Committee of the Joint Board, consisting of three members each from the Army and Navy War Plans Divisions, reviewed the entire history of the controversy over joint command in an effort to reach a solution agreeable to the Army, the Navy, and the Marine Corps. The only result of this survey was to confirm earlier disagreements. The committee, therefore, recommended and the Joint Board approved on 7 November 1919, that no further action be taken on this subject. None, it held, was necessary since the 120th Article of War had settled the question of command in a situation in which Army and Marine Corps detachments were operating together and the Revised Statutes permitted the President to appoint a supreme commander for such operations. Effective cooperation between Army and Navy forces employed in a common enterprise, the Joint Board concluded, could best be secured by:

1. Loyal, intelligent, and willing cooperation.
2. Carefully prepared joint war plans.
3. Thorough indoctrination on the function of the various branches of the services.
4. Careful wording of the missions assigned to commanders of cooperating forces.
5. Prompt relief of commanders of joint forces on indications of an inability or unwillingness to cooperate.

Significant Omission

In approving the recommendations of its planning committee, the Joint Board omitted a significant paragraph which laid down a principle that was later to become the prevailing view of joint command. This principle, called "paramount interest," held that the dominant voice in joint operation should go to the service that contributed the most and had the largest interest in the expedition. There would be no difficulty, the planners had asserted, in determining whether any service had a paramount interest in the operation. Once this was decided, "intelligent and hearty co-operation between the Services," declared the committee, "will give as effective results as would be obtained by the assignment of a commander for the joint operation, which assignment," it added, "might cause jealousy and dissatisfaction."

On the question of a unified command for Hawaii, the joint planners came up with a typical Army-Navy compromise. No single commander was necessary, they maintained. The existing system, they maintained, was entirely adequate, and there was no need for a unified commander. All that was required was that the Joint Board issue instructions to the Army and Navy commanders stating clearly the mission of each service and defining specifically the considerations that would guide "mutual cooperation" between the commanders.

The Joint Board accepted these recommendations readily and then directed the planners to draw up a statement of the mission not only for the Army and Navy commanders in Hawaii, but for those in Panama and the Philippine Islands as well. Thus during the next few months, after a comprehensive study of Pacific strategy, the planners prepared for each of these garrisons a statement of the missions of the Army, Navy, and Marine forces assigned.

In all these studies the planners carefully adhered to the principle already established for command of joint forces—mutual cooperation. This remained the official view of the Joint Board throughout the entire period between 1919 and 1941. However, there was recognition that under certain circumstances cooperation would have to give way to unified command. The difficulty lay in defining these circumstances, and in assigning command to a particular service. It was on this latter point that the principle of paramount interest came into play. The Navy favored unity of command under a naval officer for operations in which major naval forces participated, and the Army for operations conducted for the defense of the United States or her overseas possessions.

Difficulties

On this much the Army and Navy could agree, but it was not so easy to reach agreement on the service that should exercise unity of command when operations involved major forces of both services and the defense of a vital base, such as Pearl Harbor. Clearly the Army was responsible for the defense of Oahu, but should the Army commander, therefore, control the fleet based there? The Navy refused even to consider this possibility and argued with considerable justice that defense of the base in such cases should be subordinated to the requirements of the fleet, since it was the fleet that would have to

carry out offensive operations against the enemy.

There was no way of resolving these questions in a manner satisfactory to both services. But by 1935 the views of each had been sufficiently defined to permit agreement on a compromise formula that both could accept. As embodied in *Joint Action of the Army and Navy*, this formula stated that coordination between the services would be attained by one of two methods, either by mutual cooperation or by unity of command. The first, mutual cooperation, was the normal method of coordination. Unity of command was the exception, to be adopted only when the President so directed, or when specifically provided for in joint agreements between the Secretary of War and Secretary of the Navy, or when the commanders in the field agreed on the necessity for a unified command in a given situation, and the service which should exercise the command.

Joint Action also carefully defined the authority and responsibilities conferred by unity of command as well as the limitations imposed on the commander so empowered.

. . . unity of command in an operation vests in one commander the responsibility and authority to coordinate the operations of the participating forces of both services by the organization of task forces, the assignment of missions, the designation of objectives, and the exercise of such coordinating control as he deems necessary to insure the success of the operation.

Unity of command does not authorize the commander exercising it to control the administration of the forces of the service to which he does not belong, nor to issue any instructions to such forces beyond those necessary for effective coordination.

Even with this careful definition of the responsibilities and limitations of unity of command, the Army and Navy proved unable to agree on any single instance before World War II that would justify the establishment of such a command. Despite efforts from time to time to name a single commander for Hawaii, the Philippines, and Panama, all three areas still had separate Army and Navy commanders operating under the principle of mutual cooperation when the Japanese attacked in December 1941. Even then, the Joint Board accepted unity of command in Hawaii and Panama only after it became clear that President Roosevelt would take action himself if the board did not.

Conclusion

After Pearl Harbor the principle of unity of command was adopted for every major command and in every theater, extending downward to joint task forces of all sizes and upward to include allied operations on a vast scale. So effective did it prove and so well did it work, that it has since become standard practice. For a younger generation of military and naval officers, it would be difficult to envisage joint or combined operations under any other system but unity of command. Half a century was required to overcome the reluctance and fears of the services to command of their forces by another service, but from the efforts to overcome this reluctance came the principles that made unity of command so effective when it was finally established.

In America's wars of the past, we have achieved 'One Army' unity without giving it particular thought. The combined thinking and efforts of all branches and all components, working as a team under the stress of wartime demands, has been the key to our victories in battle.

Secretary of the Army Wilber M. Brucker

INDUSTRIAL MOBILIZATION PLANNING
The Base of Victory

Lieutenant Colonel Leonard A. Crosby, ***Medical Service Corps***
Faculty, U. S. Army Command and General Staff College

This article is based on the volume, The Army and Economic Mobilization, *by Dr. R. Elberton Smith, and is one of the series UNITED STATES ARMY IN WORLD WAR II, prepared by the Office of the Chief of Military History, Department of the Army.—Editor.*

A TANK without gasoline or a vital part might better be a pillbox. A rifleman without ammunition must use his bayonet or club his rifle. A modern Army without food will not long survive. Much has been written about how the military logistical system got the gas to the tank, how the ammunition went forward, and how the food reached the troops. This is only part of the story.

Realistic war plans must include a careful consideration of the availability of adequate logistic support. In a world of steadily advancing technology, logistic support on a national scale is directly dependent upon the industrial potential of the country. Since this industrial potential is not geared in peacetime to satisfy the needs of war, it is necessary to have positive plans for converting the Nation's industrial output from civilian goods to military goods.

The task of harnessing a nation's economic potential for war has come to be known as "industrial mobilization." Its basic purpose is to provide for the most effective use of resources in a national emergency. The demands of modern technological warfare, when suddenly thrust upon a nation lacking the specific equipment for war, are so novel, so complex, and of such magnitude that their fulfillment requires a nationwide industrial and social revolution. Such a revolution does not automatically "occur" when a nation goes to war. It must be planned, directed, and executed in a manner which will accomplish its objectives with a minimum of hardship and dislocation. A faulty program of industrial mobilization might easily bog down in a welter of confusion and disorder, fail to accomplish its wartime mission, or make impossible the reconversion and restoration of the economy at the end of the war.

World War I Experience

The experience of the United States in World War I was rich in object lessons for those responsible for the Nation's security in future emergencies. Industrial mobilization for that war was largely a story of hasty improvisation to meet unforeseen crises and to fill the void left by inadequate planning and preparation. When war was declared on 6 April 1917, reserve supplies in most categories of military equipment were practically nonexistent and the Army had no clear knowledge of the character and magnitude of its wartime needs. No definite military

Workable plans for mobilizing the industrial might of the United States must be directed and executed in a manner which will effectively accomplish its objectives with a minimum of hardship and dislocation

plan was available to show the intended size and composition of the Army or the rate of its mobilization. Standardization of equipment and detailed specifications were badly lacking so that prospective manufacturers could not be informed precisely what it was that the Army wished to buy.

The Army entered the war with a collection of independent supply arms and services, each with separate statutory powers to determine its requirements and to conduct procurement operations. As a result, there was only a vague knowledge of the war load to be placed upon industry, little semblance of a balanced program of requirements, and much overlapping of procurement responsibility.

At the level of actual procurement operations, the various military supply agencies engaged in a competitive scramble for the products of industry, basic plant capacity, and contributing resources. This competition, amplified by the independent procurement activities of the Navy, resulted in skyrocketing prices, greatly increased procurement costs, and inordinate profits for manufacturers, middlemen, and speculators. Of even graver significance, the uncoordinated placements of contracts and scheduling of deliveries created heavy overconcentration of the war load in particular plants and areas, congestion of transportation, overloading of port facilities, and a near paralysis of the war effort. Manufacturers, under a crossfire of conflicting demands, attempted to please too many procuring agencies, at home and overseas, and became hopelessly overloaded. Promises were given which were impossible of fulfillment. Some of the prime contractors sublet the major portion of their contracts. In reality they became a secondary line of governmental procuring agencies, extending the confusion.

As time went on the situation became progressively worse. Freight piled up at ocean terminals until freight trains had to be unloaded in fields 10 to 30 miles inland. Finally, in order to obtain unified coordination of transportation facilities, the Government took over the operation of the railroads, effective 1 January 1918. This was followed on 1 August 1918 by Government operation of telegraph, telephone, and cable facilities.

Only toward the end of the war did the United States—under the broad direction of the War Industries Board—succeed in establishing the information, organizations, policies, and procedures necessary to an orderly pattern of industrial mobilization. The unexpected announcement of the Armistice in November 1918 saw American troops in France largely equipped and supported by the Allies.

Whatever the successes and failures of America's industrial performance in World War I, it is clear that many of the problems on the production front which arose to plague the Army and the Nation as a whole were inherent in the nature of sudden, large-scale industrial mobilization. The number one lesson brought home for the first time by World War I was the

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importance of the materiel side of modern war and the inevitable timelag between the mobilization of troops and the mobilization of their all-important supporting equipment and supplies. No longer could the United States rely on the affirmation of William Jennings Bryan that in a national crisis "a million men would spring to arms overnight."

The fighting of a major war under 20th century conditions required elaborate plans for the industrial mobilization of the entire Nation and, when war actually arrived, the subjection of the entire economy to a regime of extensive controls. More than this it required an indispensable period of time, reckoned not in hours or months but in years, before the Nation's economic potential could be harnessed successfully and converted to producing munitions on the scale required.

Background of Planning

With these lessons fresh in mind Congress took steps to provide for a similar emergency in the future. On 4 June 1920 the National Defense Act of 1920 was approved, and industrial preparedness was made the responsibility of the Assistant Secretary of War. Under the terms of the new act, the Assistant Secretary was made responsible not only for War Department procurement to meet its own needs in peace and war, but for peacetime industrial mobilization planning for the entire Nation.

Discharge of these two responsibilities became the principal occupation of the Assistant Secretary of War for the next 20 years. In the year after the passage of the National Defense Act of 1920, the Assistant Secretary utilized the War Department General Staff in carrying out his planning responsibilities. In the fall of 1921, after a change of administration and the clarification of certain jurisdictional problems, the Office of the Assistant Secretary of War (OASW) was reorganized. At that time the Procurement Division, OASW, was created to handle all the procurement and economic mobilization activities assigned by statute to the Assistant Secretary. The Procurement Division consisted of two branches—a Current Procurement Branch responsible for supervision of all peacetime procurement operations of the War Department's several arms and services, and a Planning Branch to handle all planning activities. The Planning Branch became the principal arm of the Assistant Secretary in carrying out his mandate under the National Defense Act.

The Planning Branch began its life with a nucleus of four officers whose initial assignment was "to start something to enable the Assistant Secretary to carry out the appropriate provisions of the National Defense Act." During its 20 years of existence the Planning Branch grew to a large organization and became the focal point of the Nation's peacetime efforts to prepare for the effective harnessing of national resources in time of war. The creation of the Army and Navy Munitions Board to effect joint planning, the establishment of the Army Industrial College to train officers of the armed services in procurement and industrial mobilization, the planning sections of the supply arms and services, the formulation of the basic pattern of procurement planning, and the development of the Industrial Mobilization Plan (IMP) all resulted from the efforts of the Planning Branch, OASW.

In time of war the Planning Branch was to be merged with the Current Procurement Branch for the execution of the manifold tasks of a wartime armament program. The life of the Planning Branch came to an end on 14 February 1942 with its replacement by the Resources Branch, Office of the Under Secretary of War (OUSW). Less than one month later the bulk of the Office of the Under Secretary of War, including the former Planning Branch, was absorbed by the Army's newly

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created Army Service Forces (ASF) under Lieutenant General Brehon B. Somervell.

Procurement Plans

In their procurement planning activities throughout the 1920's and 1930's, the successive Assistant Secretaries attempted as thorough a program as available funds and personnel would allow. Early in the program the procurement planning function was seen to possess two major objectives:

1. The development of specific and detailed plans for the procurement of all important items for which the War Department had procurement responsibility.

2. The formulation of general policies, procedures, and organizational plans for the effective conduct of a wartime procurement program.

The specific procurement plans were developed by the several supply agencies of the Army within the framework of the general procurement policies laid down by the Planning Branch. These in turn were meshed with the broad plans for nationwide industrial mobilization. All plans were, so far as possible, kept up to date and responsive to current estimates of military requirements based on the latest staff plans for troop mobilization. Finally, it was taken for granted that the actual procurement of munitions in time of war, as in peacetime, would be accomplished by the established military procurement agencies.

Because of statutory limitations on the allowable number of planning personnel and in order to reduce to manageable proportions the burden of procurement planning upon industry as well as the Government, the War Department confined its detailed planning activities to items known to present the most difficult procurement problems. In the mid-1930's the military supply agencies were instructed to classify all their procurement requirements into three groups:

1. Section I—Those items which present difficult procurement problems and require intensive formal plans.

2. Section II—Those items which present only minor procurement problems, and for which only informal planning is necessary.

3. Section III—Those items which present no procurement problems, and for which no plans are necessary.

The total number of potential items of procurement, for which the War Department was responsible, was enormous. In World War I the Army's "shopping list" had contained approximately 700,000 different items; this number included not only military type end items but specialized parts and components as well as commercial items. At the end of 1940 the Signal Corps Supply Catalog alone listed about 50,000 items. However, at this time only 7,400 items for the War Department as a whole were recognized for planning purposes. These 7,400 items, which with their major components made up Sections I, II, and III, represented important items of supply to be issued to troops, and the General Staff required them to be kept under surveillance for procurement planning purposes. The most important group, Section I, contained approximately 1,200 items, of which 578 were Ordnance. Many Section I items, especially for Ordnance and Chemical, consisted of complex components and subassemblies to be separately procured and assembled into a single end item.

An appreciation of the physical characteristics and complexity of military items is prerequisite to an adequate understanding of the difficulties of war production. Consider a few of the technical problems in producing ammunition. First of all it was necessary to devise a propellant power for each of dozens of types of projectile which would be powerful enough to hurl the projectile long distances with great penetrating force. The powder had to be uniform, with almost completely un-

varying performance characteristics permitting close-to-perfect ballistic accuracy. It had to be chemically stable so that it would not deteriorate, even when stored for long periods in damp climates or other unfavorable conditions. It had to be smokeless and, if possible, flashless. These and many other exacting conditions had to be met, most of them under the opposing pressures of urgency and tremendous safety requirements, while the Nation was building an entire new powder industry from the ground up.

The exacting performance characteristics required of military items led to production problems of unprecedented difficulty in almost all categories of equipment. For example, the familiar Springfield Rifle, Model 1903—of which nearly a million and a half were produced for World War II —was made up of 93 different parts. Production of these parts, each of which had to be machined to perfection, required 103 different dies, 463 different jigs and fixtures, 506 different cutting tools, 1,320 working gauges, and 1,339 inspection gauges.

This complexity was increased manyfold for larger items of equipment. An antiaircraft gun carriage required 1,800 separate drawings; an Army tank 2,300; and the number of drawings—including those containing specification changes—required for the production of heavy bomber planes ran into the thousands. But such widespread complications were not peculiar to the manufacture of large or complex items of equipment procured by the Ordnance Corps, the Signal Corps, and the Army Air Forces. Because of universal shortages and higher priority for competitive items, the Quartermaster Corps and other Technical Services of the Army experienced production difficulties out of all proportion to the basic complexity of the items procured. A full appreciation of the technical difficulties of war production can be gained only by a detailed study of the history of each item.

The completion of final formal procurement plans was the culmination of a lengthy process consisting of many separate steps varying in number with the type of item. In 1938 the Ordnance Department listed 33 steps in the entire cycle from item development through approval of a formal procurement plan. A number of these steps in turn comprised several subordinate parts, and it was said that "the whole cycle requires years for its completion."

The preparation of specific plans for the procurement of individual items represented the core of War Department procurement planning. In general, the principal stages in the development of procurement plans were:

1. Determination of the types of end items required in an emergency.
2. Computation of quantitative requirements by time periods beginning with M-day.
3. Apportionment of the total procurement load for each item among the various manufacturing and procurement districts throughout the United States.
4. Selection and allocation of specific manufacturing facilities for their productive tasks.
5. Preparation of these facilities for their wartime responsibilities.
6. Consolidation, approval, and revision of plans.

The following paragraphs provide a brief summary of the nature of these stages and an indication of War Department achievements during the two decades between wars.

Determination of Required Types

This was a complex process involving the joint action of many arms and agencies of the War Department. In general, specific military supplies and items of equipment had their genesis in a statement of desired military characteristics, followed by a successful development program, the official adoption and "standard-

ization" of each item, and the preparation of accurate, detailed specifications for manufacture. The using arm initiated the request and the appropriate supply agency would then undertake the necessary development through the point of engineering tests. The achievement of complete preparedness in the field of specifications was an ideal impossible of fulfillment. The using and supply agencies inevitably tended to delay submission of final specifications as long as improvements in design were possible. Although the Army's specifications were reportedly only about 75 percent complete toward the end of the planning period, this represented a major improvement over conditions on the eve of World War I.

Computation of Requirements

A knowledge of quantitative requirements was prerequisite to the determination of the planned procurement load to be placed on industry, the apportionment of this load among the several procurement districts, and the advance selection of and allocation to specific firms which would undertake actual production in time of war. Furthermore, the various activities involved in the larger area of nationwide industrial mobilization—the provision of adequate supplies of raw materials, power, fuel, transportation, and the like, and the establishment of systems of program control, priorities, and allocation of production among the military, industrial, and civilian-consumption sectors of the economy—all depended for their planning and execution upon a knowledge of military requirements. But requirements are subject to wide fluctuations by unforeseen developments in strategy, tactics, techniques, organization, theaters of operation, or of designs, requirements, and specifications. All play havoc with orderly procurement. To keep these changes to a minimum the General Staff developed the concept of "protective mobilization" to replace the earlier "general mobilization" planning. This concept contemplated immediate mobilization of a small and well-equipped defensive force (essentially the existing Regular Army and National Guard), with rates of augmentation lower than those contemplated under the earlier general mobilization plans.

Under this concept broad estimates of supply requirements became available and thereafter procurement planning was stepped up from a three-year cycle to a one-year basis with the intention of completing essential procurement plans by 30 June 1940. Thereafter, materiel requirements were based on successive revisions of the Protective Mobilization Plan and were greatly assisted by the decision to undertake large-scale rearmament in the summer of 1940.

Apportionment of the Load

Here, in order to provide for peacetime planning as well as to provide for decentralization in time of war, the War Department divided the United States into a number of procurement districts. It was the duty of each district to seek out and survey industrial capacity for the manufacture of items for which the cognizant supply agency was responsible. Reports of these surveys formed a basis for a tentative apportionment of the total procurement load called for by existing estimates of requirements.

After the tentative apportionment of the load, each district conducted a detailed survey of the plant and equipment of individual firms to determine the specific facilities necessary for, and capable of, producing the district load. Because of the magnitude and complexity of the task, as well as continual changes in the underlying conditions, apportionments frequently had to be modified.

Allocation of Facilities

The allocation system was designed to earmark and prepare specific plants for particular tasks so that a minimum of

time would be lost in getting emergency production underway. An allocation was formally defined as the assignment, to a particular procuring arm or agency, of productive capacity in a facility for the purpose of procurement planning and emergency procurement.

Early in the development of the system it was found that two or more supply agencies often had an interest in the same establishment and that joint allocations were necessary. Further experience indicated that unconditional allocations, either the joint or single-service variety, were too inflexible and wasteful of capacity in the case of many large, complex establishments. To achieve better results, the planners designated these large plants as "reserved facilities"; some served both the Army and Navy, and some served two or more supply arms of the Army. All reserved facilities were allocated on the basis of "capacity credits," which meant that a certain percentage of the plant capacity would be allocated to each of the several procuring agencies.

An important feature of the allocation system was the measurement and recording of the total planned production load to be placed in time of war upon individual facilities as well as upon industry. This was done by assuming a wartime potential capacity for a firm and giving it a rating of 250 points, or two and one-half times the normal peacetime capacity of 100 points. These plants also were rated in this manner by item capacity. This meant that a plant with several departments each capable of producing a separate item was rated 250 points for each item as well as 250 points for the plant as a whole.

The measurement and recording of the proposed procurement load prevented overloading of individual facilities, forced a spreading of the load to other plants, made geographical overloading apparent, and finally suggested to what extent new construction and plant expansion would have to be undertaken to supplement the existing structure of American industry.

At the beginning of the program the various supply agencies rushed out to stake claims for facilities and the total number of allocations grew rapidly from 5,450 in 1923 to 20,455 in 1926. More facilities were allocated than could be surveyed and utilized. Shortly thereafter, efforts were made to reduce the number of allocations to the minimum consistent with safe planning and the total facilities allocated numbered 12,949 in 1941.

Although the allocation plans developed in peacetime were of necessity specific, they were not intended to be used without modification in time of emergency. In view of the many inevitable changes in requirements, technology, and commitments of the allocated facilities themselves—to mention only a few factors—it was understood that the plans rarely would be utilized in the form in which they stood at any particular time.

Preparation of Facilities

The preparation of individual facilities for their wartime responsibilities was attempted in various ways, the most common being the development and adoption of an "accepted schedule of production." After the receipt of a specific allocation, procurement districts conducted a detailed survey of the firm's plant, equipment, management, labor forces, peacetime production characteristics, and other relevant factors. In cooperation with management, a proposed emergency production schedule indicating the monthly deliveries, up to 24 months after the initiation of production, for each item of procurement, was prepared. Acceptance of this schedule did not commit either the firm or the Government to a specific contract but indicated the firm's willingness and ability to produce the desired items in the quantities and time period specified. Although planning of this kind was indispensable to the education and preparation of American

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industry for rapid conversion to war production, the heart of the conversion process would be the actual task of tooling up and eliminating the many thousands of production "bugs" certain to appear in the transition from paper plans to actual production. Opportunities in this direction, until the end of the 1930's, were negligible.

In the fall of 1938 the influx of foreign orders and the gradual stepping up of current procurement provided the first solid education and training for many of the allocated firms. But it was only after the replacement of the era of planning by the gigantic rearmament program of 1940 that industry on a wide scale received the actual experience in munitions production which was to bring the Nation to a relatively high degree of industrial preparedness by the time of Pearl Harbor.

Approval and Revision of Plans

The final stage in preparing formal procurement plans was the consolidation of all accepted schedules of production and other relevant information into a master plan for each Section I item of procurement. All procurement plans had to be approved by the Office of the Assistant Secretary of War and were revised at least once every three years until 1939, when procurement planning was speeded up and placed on an annual basis. The specific procurement plans developed by the Army during the interwar period proved to be invaluable when the crisis arrived in 1940. On this occasion, in contrast to the confusion of World War I, the Army knew what it wanted to buy and where to obtain it. With this knowledge it was able to place contracts and get production rolling in a minimum of time. Without such knowledge and planning, the inevitable confusion attending large-scale industrial mobilization would have been magnified manyfold.

The 20 years of procurement planning by the War Department provided a far greater degree of industrial and military preparedness than had existed a generation earlier when the Nation was drawn suddenly into World War I. Procurement planning is vital not merely as a prerequisite to broad industrial mobilization planning, but in time of war represents the very heart of the entire economic mobilization process. Without a solid foundation in procurement planning, emergency production for war could not get started. A detailed study of the planning efforts of the interwar period would uncover many inadequacies, blind alleys, and other shortcomings. Nevertheless, even a cursory review conveys some idea of the magnitude of the task involved and reveals an impressive number of achievements.

During the 20-year period of planning prior to World War II, under the statutory responsibilities conferred in 1920 upon the Assistant Secretary of War, the Army bore the principal burden of ensuring the Nation's industrial preparedness to meet a war emergency. Within the limitations imposed by lack of funds, insufficient personnel, public indifference or hostility, and the inherent obstacles to planning for so uncertain and difficult an enterprise, the Army's prewar plans were realistic and thorough. First to be undertaken was the development of specific procurement plans which resulted in basic specifications for military items, balanced estimates of initial requirements, and the earmarking of specific industrial capacity to permit the immediate launching of a rearmament program. At the beginning of 1940 the procurement plans were revised, expanded, and put to work. When the emergency arrived, the availability of these plans and the knowledge gained in their preparation made possible the rapid placement of contracts without the degree of floundering, delay, and confusion apparent at the beginning of World War I.

Also contributing to victory in World War II were the Army's general procurement plans and the complex array of

studies in the field of nationwide industrial mobilization. General procurement planning reviewed the entire field of procurement law, devised the form and principles of wartime contracting, and prepared new legislation to remove the crippling barriers of peacetime law and to create additional powers essential to emergency procurement. Industrial mobilization planning produced studies and recommendations for the apportionment of basic industrial capacity and for the application of wartime controls in many fields: prices, materials, labor, foreign trade, transportation, and other categories.

The several versions of the World War II Industrial Mobilization Plan also contained important organizational proposals, not only for existing and new governmental agencies essential to wartime functions, but for harnessing and integrating the Nation's basic industries into a unified effort. The War Production Board, the Office of Price Administration, the Board of Economic Warfare, and many other World War II organizations and agencies bore remarkable resemblance to prototypes suggested in the Industrial Mobilization Plan.

World War II

The experience of the United States in developing and utilizing her industrial capacity for World War II may well go down in history as the classic example of industrial mobilization. Despite all the confusion, error, and uncertainty that characterized the two-and-a-half year period from mid-1940 through 1942, the broad pattern of industrial mobilization for the entire war represented an orderly and systematic process which ran the full cycle of planning, buildup, full-scale war production, and demobilization. This pattern was possible because of a happy conjuncture of idle resources and the gift of a lengthy period of "borrowed time" furnished by the insular position of the United States and the heroic resistance of her subsequent Allies. Moreover, the global character of World War II, with its far-flung navies, immense land armies, and massive airpower—for the most part all built from scratch—gave rise to total military requirements which for sheer bulk and quantity of materiel were without parallel in the history of warfare.

The knowledge gained from the experience of World War II has permanent significance and validity. But every war in the history of mankind has involved its own unique set of military, political, economic, and technological conditions and objectives. The lessons learned from the study of one particular war will poorly serve the planners and administrators appointed to prepare for future crises if these lessons consist merely of applying actual solutions to particular problems existing in the past.

For perhaps the last time in its history the Nation's ocean barriers furnished a generous measure of protection from serious damage or invasion by a hostile power. Also, in a war in which the survival of free democratic institutions was at stake, this Nation's efforts were preceded by those of other nations engaged in a common cause. The efforts of these Allies provided this Nation with an indispensable period of 18 months of vital time. This was the minimum period considered essential by our planners for our Nation to rearm. Finally, the United States began this vast program of rearmament with huge surpluses of idle resources. It began in a time when we had widespread unemployment of men, machines, and productive resources in general. Thus the United States was favored by a combination of circumstances which may never recur.

There is little doubt that America's outpouring of war materiel, rather than an Allied preponderance of manpower, was the dominant factor in winning the war. However, victory in World War II, on the homefront, as in the fields of battle, did

not come easily or without its portion of error, waste, and tragedy. The mistakes, shortcomings, and failures in the planning and execution of the Nation's war production program were many and varied. Military requirements for World War II constituted a heavy drain upon economic resources all across the board, creating some of the most stubborn and complex administrative problems of the war.

Planning Today

With the development of a thermonuclear capability by other nations, the importance of being able to retaliate immediately in kind, in case of a surprise nuclear attack on this country, has increased greatly. For this reason current industrial mobilization planning has as its central theme—time. All elements of the Industrial Mobilization Program are directed toward reducing the amount of time which it takes for any given industry or plant to convert from civilian production to military production. One obvious method of gaining time and speeding up the date of logistic readiness would be the acquisition during peacetime of sufficient mobilization reserve stocks to satisfy materiel needs until production could build up to meet mobilization requirements. The cost of this method would be considerable.

In addition, another disadvantage accrues—obsolescence. Modern tanks, guns, planes, and other important implements of war undergo constant development and improvement. As new models are turned out, the old ones become less desirable and less effective and eventually must be relegated to the status of obsolescence. Of course, there are items of less perishability of design and less volatility in development that can be acquired and stored with reasonable expectancy of use before overtaken by technological programs.

In consideration of these facts, the Department of Defense has announced the following policy for planning with industry for production during periods of national emergency or mobilization.

1. The objective of production planning is to assure that the planned use of the industrial capacity of the United States mobilization base is in accord with national security policy and provides the capability to support fully the military objectives contained therein.

2. Production planning with industry will consider the following eventualities:

a. General war which involves a severely damaged industrial base.

b. Conflict short of general war with an undamaged industrial base.

3. Production planning will be consistent with approved strategic concepts.

4. Planning with industry for general war will emphasize prewar readiness without major reliance on postattack production. In this connection every effort will be made to ensure the continued production of selected items and their components which are considered vital. Measures to be considered in accomplishing this include the dispersal of production resources, alternate sources, and maximum postattack delivery of these items from surviving plants.

5. Planning with industry for production and maintenance for conflict short of general war will emphasize the production of items essential to the combat support of military forces. Such planning will consider dispersed production sources, the utilization of alternate sources, and subcontractor planning for components and assemblies which meet the criteria for end item planning.

6. The planned production rate objective for any item shall not exceed that rate required to sustain the military activity of the level of forces approved by the Secretary of Defense.

The announcement of this policy recognizes that in recent years it has become increasingly evident that a single system and set of planning procedures are not

adequate to accommodate planning for the wide variety of military items which must be obtained from industry in the event of an emergency. In addition, it is now necessary to assure industrial readiness for two types of conflicts rather than for a single contingency.

In order that production and procurement readiness will keep abreast of these changes, various planning systems are required. The industrial readiness planning systems currently authorized for use are as follows:

1. *Acceleration planning.*—This is conducted by a procuring military department with a producer for an increased output during a conflict short of general war. Normally, both the manufacturer and the military department will agree on the required increased rate of production. However, if the military department desires a more rapid increase in production, then the normal inventory level of the controlling parts in both the prime and subcontractors may be increased to provide the necessary production materials and reduce lead time. The quantity of additional parts and subassemblies acquired for this purpose are then consumed by the conclusion of the contract under nonemergency conditions. This, in effect, limits the quantities of additional inventories that may be provided.

2. *Conversion planning.*—This is an arrangement where a manufacturer plans to produce, during an emergency, items other than those he is currently producing. Conversion planning requires a determination be made as to whether existing production capacity can be used for different items, how quickly such new production can be started, what rate can be expected, and what actions are needed to overcome production problems.

3. *Compression planning.*—This planning is designed to enable a current military producer to continue to produce after his source of resources are destroyed. Under this system the contractor's normal production inventory may be increased so that the optimum number of in-process end items can be completed on a crash basis without further receipts from his suppliers or subcontractors.

4. *Subcontract planning.*—The objective of this planning is to prevent delays in end item production due to production bottlenecks at lower levels of industry. Thus subcontract planning is directed toward those producers who are likely to be overloaded with military orders in an emergency, are sole source suppliers, or for other reasons represent a potential production bottleneck.

5. *Supplier planning.*—Supplier planning is designed for commercial type items which have military application. This system identifies the various sources of supply and determines delivery capabilities. The procuring agency thus is able to develop lists of sources for many such commercial type items.

6. *Industry preparedness measures.*—These are plans which find out where production bottlenecks might develop during an emergency and develop corrective action before an emergency arises. Examples of types of industrial preparedness measures are:

a. Design of production equipment for use during an emergency.

b. Maintenance of drawings and specifications for use in emergency production.

c. Elimination or substitution of strategic and critical materials to assure emergency production.

d. Development of production processes for use in a stepped up emergency production program.

7. *Special studies.*—In addition to the readiness planning systems described herein, there are various other planning techniques for use as the need occurs. For example, a question may arise as to the ability of an entire industry to satisfy probable emergency demands. Again, it

may be desirable to know the ramifications of emergency production of all the items in a single category. In these cases a special study would be made to solve the problem.

Selection of Planning Systems

Plans developed between the military departments and industry will be based upon one or more of the preceding planning systems. Additional systems may become necessary. Each military department is encouraged to recommend new systems whenever planning effort is directed to its production or procurement in an emergency. The converse of this general rule is equally applicable. At the same time, it is recognized that there may be a number of important military items for which no further industrial readiness planning is needed. These items are those for which inventories, current production, or current procurement are kept at a high level.

The Department of Defense has recognized that industrial mobilization planning must be thoroughly coordinated. This realization also is apparent in the other Federal Agencies. For this reason the organization shown in Figure 1 has been adopted.

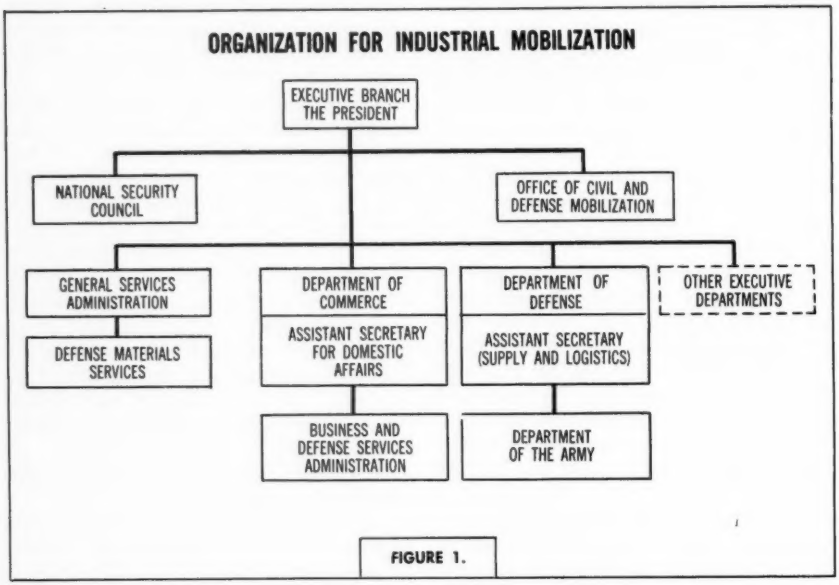

FIGURE 1.

The military departments select the items for which industrial readiness planning is necessary, the planning system(s) which is to be used in such planning, and determine the intensity of the planning effort to be undertaken. As a general rule, the more essential an item is determined to be to the effective operation of the combat forces, the more intensive will be what-

The Office of Civil and Defense Mobilization (OCDM) was established in the Executive Office of the President for the purpose of providing one control agency to exercise strong leadership in our national mobilization effort. OCDM is the top planning body for industrial mobiliza-

tion and acts to apportion available material and production resources to satisfy both civilian and military needs. The Director of Civil and Defense Mobilization, being a member of the President's National Security Council, is able to give effect to the desires of that body in the formulation of over-all defense mobilization plans.

The Business and Defense Services Administration (BDSA) of the Department of Commerce performs the mobilization functions which were once a responsibility of the National Production Authority (NPA). The BDSA provides an organizational nucleus capable of expansion into a production and materials control agency in the event of an emergency.

The Defense Materials Services of the General Services Administration is responsible for procurement, storage, and handling of the national stockpile of strategic and critical materials. This stockpile includes those materials considered by some departments of the Government to be critical as to availability and of strategic importance to any defense effort. Designated items and quantities are referred to OCDM for final consideration and approval for stockpiling.

The Assistant Secretary of Defense (Supply and Logistics) is responsible for carrying out the National Industrial Mobilization Policies of OCDM and for developing the over-all policies and procedures relating to industrial mobilization planning in the Department of Defense.

Thus it is seen that great effort is made to intergrate closely all aspects of national security and industrial mobilization planning. The Central Intelligence Agency correlates and evaluates intelligence and disseminates it to the National Security Council and the other governmental agencies. The National Security Council advises on the integration of domestic, foreign, and military policies. The Joint Chiefs of Staff provide strategic plans and unified operational control of the armed services. The Office of Civil and Defense Mobilization is responsible for policy, direction, control, coordination, and review of all mobilization activities of the executive branch of the Government.

The Business and Defense Services Administration, the Defense Materials Services Administration, and the Atomic Energy Commission, provide production and materials control, procurement, and storage of strategic and critical materials included in the national stockpile. Finally, the Secretary of Defense is responsible for carrying out the National Industrial Mobilization policies of the Office of Defense Mobilization and for developing the over-all policies and procedures relating to industrial mobilization planning in the Department of Defense. (See Figure 2.)

Future Concepts

The organizations and plans discussed here must be kept up to date and, in the future, must be realistic and modern. The reliance previously placed on our production base in World War II has been reduced by the acquisition of a thermonuclear delivery capability by other nations. Although a production base will give us valuable production during any long period of strained relations or during a limited war, it may well be severely crippled by the first nuclear exchange in a general war. Estimates of the degree of damage vary. It is possible that the only continuous production that we could reasonably rely on during a general war would be from those protected or dispersed production facilities that we have established prior to attack. Since, therefore, major reliance cannot be placed on industrial production during the early months of a recovery period following a nuclear exchange, it has been proposed by some that we rely primarily upon materiel stocks in being and in place to support our forces in the early phases of a general war. On the other hand, in a limited

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war no thermonuclear attack on the Continental United States is envisioned; consequently, the production base could operate without interruption.

It will be critically important, if a limited war breaks out, to increase production as soon as possible to a status sufficient to replace stocks at the rate they are being consumed and to build up reserves to the level required for a general war. To this end it is vitally important that we maintain, in a high state of readiness, a production base of laid away facilities which, when added to the capabilities of facilities in active production, will produce at a level slightly above the rate of combat consumption in limited war.

The capacity of the currently operating production base should be sufficient to turn over the inventory of important items during the period of their useful life prior to obsoletion. This period may be as little as five to six years for the new revolutionary weapon systems, such as guided missiles

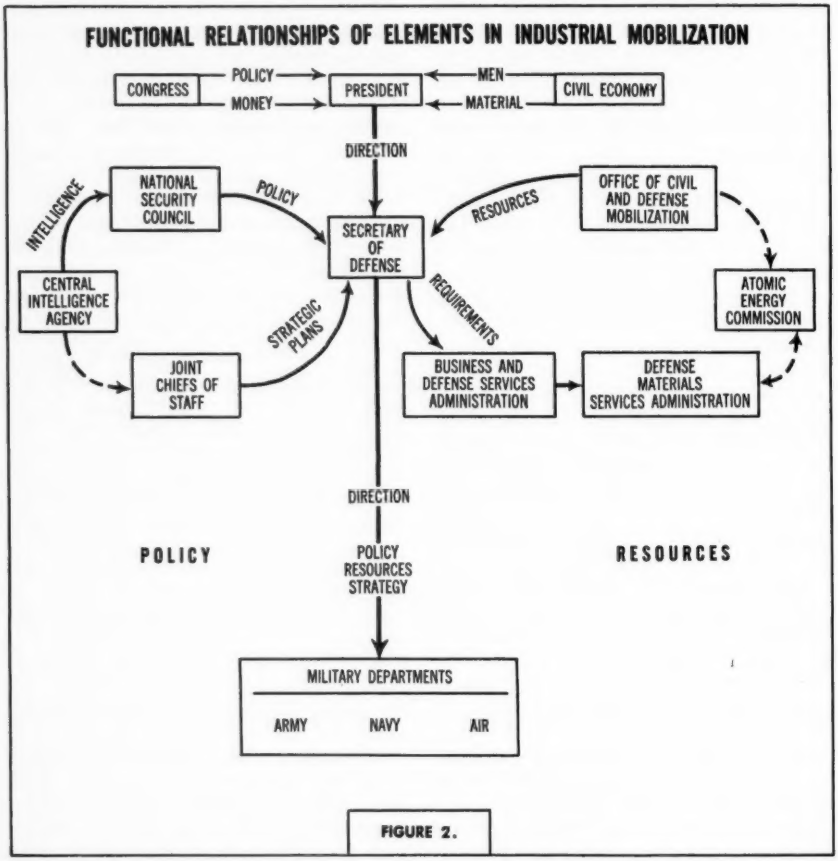

FIGURE 2.

and electronics equipment. It may be much longer for more stabilized materiel, such as small arms, mortars, cannon, and tanks.

When we establish additional sources of critical components or new assembly facilities for such items as surface-to-surface missiles, antiaircraft and antimissile missiles, and important electronic equipment, we must, insofar as possible, locate them in dispersed or protected locations. By this means we will improve the possibility of securing continuing production of materiel needed for survival in nuclear war.

For economy we must not lay away production facilities in a high state of readiness except where they are required to replace consumption at the rate the limited war would expend in combat. Any other production facilities should be laid away only if the items they can produce are not close to obsolescence and then should be laid away in a very low state of readiness. Those idle facilities needed for limited war should be maintained in a high state of readiness. Those facilities needed for only general war should be maintained in a low state of readiness.

Again for economy reasons we must dispose of excess facilities promptly. In addition to disposing of the excess production capacity, we must ensure that all laid away facilities are considered for disposal as soon as the items they produce approach obsolescence or the facilities require major repair or rehabilitation. Whenever the purchase of new production equipment is required it should be determined whether it is available from the machine tool reserve and, if not, whether it is available from any laid away facility required for general war. Finally, the machine tool reserve must be purged of obsolete tools.

The military forces must continue to plan with private industry, without major expense, for conversion to war production to support the United States forces in a general war.

Conclusion

It is apparent from the foregoing that workable plans for mobilizing the industrial might of the United States are essential if this country is to react rapidly and effectively to a future threat. It is patently unwise to endanger the national economy by disregarding costs in mobilization planning. It is financially impracticable to ensure complete immunity from all possible enemy action. No longer can a relatively unarmed, nonaggressor nation place reliance on the ponderous mechanism of industrial mobilization during a period of presumed safety. World War II types of war are obsolete in an era of international hostility and nuclear technology in which a hostile power could create, without warning, a nuclear holocaust in the nation's midst. In such an era, when weakness is an open invitation to aggression and an all-out war is the short, certain pathway to international destruction and chaos, many of the successful prescriptions and advantageous consequences associated with World War II have lost their relevance. For this reason industrial mobilization planning can no longer be regarded as the only adequate substitute for military power in being. Nor in the nuclear age can victory in war be considered an acceptable alternative to the prevention of war. Industrial mobilization planning must reflect a balance between the cost of readiness and the value of readiness. To this end it is hoped that current and future mobilization planning will improve and increase, will soften the blow if and when it comes, and will provide the necessary solid base for our ultimate victory.

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AIRCRAFT DELIVERED SMOKE
Past, Present, and Future

Lieutenant Colonel Alba B. Lathrop, *Artillery*
Army National Guard Advisor

LAND warfare requires the use of highly mobile combat forces with an overwhelming amount of firepower and with the ability to disperse and mass rapidly. Forces seek to preserve secrecy during this maneuver and achieve surprise by capitalizing on cover, concealment, and deception. The use of artificial concealment (smoke) enables a mobile force commander to increase his flexibility greatly in application of combat power by denying the enemy observation of his movements, hampering effective enemy use of direct or observed indirect fire weapons, and by deceiving the enemy.

Air Delivery Problems

Smoke delivered by supporting aircraft is produced in larger quantities for a given period of time and in greater lengths than can be produced by the ground weapons readily available to tactical commanders. Tactical aircraft may produce smoke in situations where it is impossible to do so by any other means, that is, assault landings, airborne landings, and to cover withdrawal of ground smoke weapons. However, aircraft smoke delivery depends upon flying conditions over the base as well as over the target, and, therefore, is more dependent upon weather than other means of delivery. Use of aircraft for smoke delivery missions may be assumed to reduce aircraft availability for other forms of direct air support. The operation is not under direct and immediate control of the ground commander; therefore, it is lacking in flexibility. In making the smoke plan, the time factor must be considered; the plan may have to be modified or canceled. Aircraft providing smoke support must fly straight, low, and level and are, therefore, vulnerable over enemy territory. This may have a bearing on the certainty of the screen being provided at the right time.

In general, smoke support from Air Force manned aircraft should be expected only when it is not within the capabilities of ground weapons to fulfill the task. On this account aerial delivery of smoke should be considered only in large-scale attacks such as airborne operations and seldom in the form of direct close support of small formations or limited attacks. Delivery of smoke by organic Army aircraft offers great possibilities and added insurance of the availability of the screen when required in friendly areas. However, this type aircraft is highly vulnerable even to small-arms fire. This vulnerability imposes considerable risk if this system is employed to produce the required quantity of smoke in areas dominated by the enemy.

Aircraft delivered smoke is an effective aid in the attack and defense and can be used on the nuclear battlefield to tactical advantage to attain surprise, combat deception, and thermal radiation attenuation

Characteristics

General characteristics of smokescreens established by aerial smoke bombs under favorable weather conditions are indicated in the following chart:

Type and Number of Airplanes	*Number of Bombs in Normal Load (12 to 18 minutes' duration)*	*Length in Meters of Smokescreen (Estimate)*	
		Wind Perpendicular to Combat Route of Airplane	*Wind Is Parallel to the Plane through Plane's Ground Track*
One fighter aircraft	4	250-270	750-900
One bomber	8	450-570	1,350-1,600
A flight of three bombers	24	570-1,600	3,600-4,500

In laying smokescreens by means of spray one *F-84* or *F-86* airplane equipped with *M10* spray tanks can produce a screen 450-640 meters long which lasts five minutes; a flight (three *F-84's* or *F-86's*) can produce a screen 1,270-1,630 meters in length under favorable weather conditions. It is estimated that *F-100D* or *F-105* aircraft equipped with more modern spray tanks could produce a 30 to 50 percent larger screen with improved characteristics.

Offensive Operations

In the attack the use of air delivered smoke is an effective aid. Screening smoke is used to neutralize hostile observation posts, blind enemy individual and crew-served direct fire weapons, conceal the attacker's maneuver, and assist in achieving surprise. It also may be used for deception although ground generating means are more economical for this purpose. When smokescreens are planned, consideration is given weather conditions—particularly wind direction and drift of smoke clouds —to make sure they will not hinder observation or maneuver of friendly units.

Throughout the African campaigns the Royal Air Force used smokescreens created by aircraft to assist ground operations both experimentally and in actual combat. On at least two important occasions in the Allied advance smoke was laid by *Boston* aircraft and proved successful in aiding ground troops. In general, the method used was to release smoke containers from the bomb bays in the same manner as bombs with the plane flying at 230 to 250 miles per hour about 20 to 100 feet above the ground. The most difficult problem was the identification of the precise area to be screened. This necessitated the use of navigational guides.

Strict adherence to the timing of the mission was found essential. On one occasion an aircraft had to fly around for 10 minutes waiting for the ground party to put their markers in place. The element of surprise was lost and the aircraft experienced intense light antiaircraft fire.

During World War II the Soviets were

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slow to realize the value of smoke on the battlefield; however, as the war progressed the Soviet Army made extensive use of artificial smoke both in offensive and defensive operations. By 1943-44, the Soviets had learned to use smokescreens to attain tactical advantage. Scarcely any large Soviet offensive operation was undertaken after the summer of 1944 without the use of smoke. Frequently, screens were laid down on a very large scale along wide sections of the front and by V-E Day, Soviet troops had acquired a remarkable skill in the use of smoke.

Today, the Soviet Army possesses all types of munitions and apparatus for the creation of artificial smokescreens.

The Soviets use smoke to screen attacking forces from enemy view until contact is made. They consider that smoke reduces the efficiency of rifle and machinegun fire three to five times when the objective fired upon is screened with smoke and 10 to 15 times when the firing points are blinded with smoke.

The Soviets fire smoke directly upon strong enemy defensive positions to blind, harass, and confuse the enemy before and during the attack.

Defensive Operations

In the defense smoke is used on the enemy force to reduce his effectiveness of fire and hamper his movement. Since defensive tactics are dependent largely on observation, firepower, and counterattack, the use of smoke in such a situation must be well-planned and coordinated. The enemy may use aircraft delivered smoke suddenly on the defending forces to hamper observations and reduce the defender's ability to meet an attack by hindering his observations.

In Korea smoke was employed to protect friendly troops of the 2d, 3d, and 7th US Infantry Divisions, 1st US Marine Division, and others from observed fire until they had time to dig in. Smoke was used repeatedly to conceal gun flashes, artillery positions, construction sites, main supply routes, troop movements, and for other purposes. Several smoke operations in Korea continued for extended periods to screen our forces from enemy direct fire and observation.

Retrograde

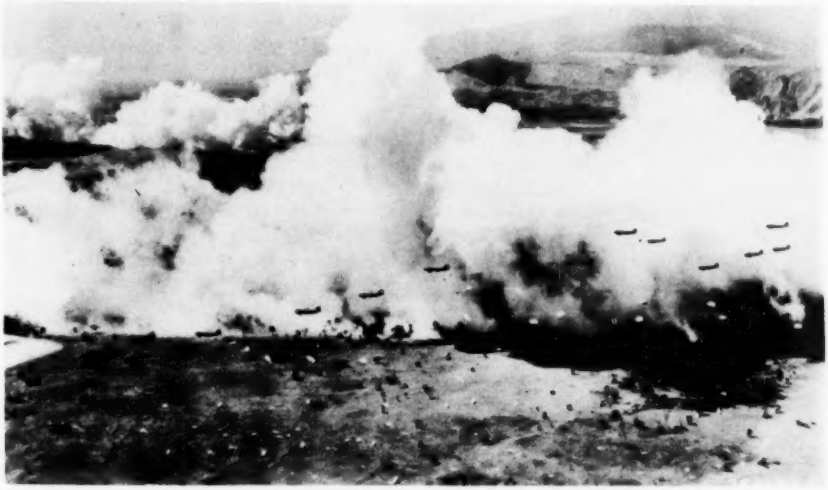
During the conduct of a rearward movement, smoke should be used—where weather conditions permit—to provide concealment for movement and assembly of exposed units. Care must be exercised that smoke does not also provide a screen for the enemy's advance. Flank concealment may be afforded by the use of smoke during a movement to the rear.

River Crossings

In France during World War II the 3d Army alone made 32 river crossings in which smoke contributed significantly to the success achieved. The crossing of the Moselle River at Arnaville was of particular interest. During the very short time in which smoke was curtailed, German artillery did more harm to our effort than during the much longer period when smoke concealment was provided. Smoke operations in World War II were conducted extensively by smoke generator units supported by 4.2-inch mortar units.

Smoke for screening river crossings is certain to draw enemy attention and, therefore, should extend over enough of the area so that actual point of crossing will not be obvious to the enemy. Large quantities of smoke are required. Consequently, aircraft delivery of smoke is limited to essential supplementary use. Dummy smokescreens can be particularly effective in protecting river crossings by drawing enemy fire and observation and preventing the massing of enemy forces at the crossing point. Dummy screens should be logically located and similar in extent to the real screen so that the enemy is unable to determine which screen is concealing the vital area.

Exercise *Sagebrush* indicated that the smoke operations during a river crossing must be extensive in time and area coverage to conceal crossing activities adequately. Smoke units provided in the type field army were not sufficient to perform the desired tasks. Aggressor forces used during the exercise reported that the smoke operations used by the United States forces were potentially their best deceptive means, and there were instances where the activity under the smoke could not be observed and others where ferry operations under smoke cover were mistaken for bridge erection.



Smokescreen used in an airborne operation

Soviet tactical concepts include the fact that smoke can be used to great advantage to curtain river crossings. When used for this purpose several screens may be laid to deceive the enemy as to the exact location.

Amphibious Operations

Amphibious operations provide frequent opportunities for extensive and varied use of screening smoke. Properly used, smoke reduces the vulnerability of the land force to enemy fire during the movement and assembly of transports, the loading of landing craft, the ship-to-shore movement, and the initial occupation and organization of the beach. When combined with neutralizing supporting fires, smoke helps provide assaulting forces with security during the critical phases of the operation. Area screens, used offshore, may conceal the transport assembly area. When established ashore, these screens may conceal the landing force during the organization and development of the beachhead. Other screens may be laid directly on hostile positions, or between them and the landing force—either frontally or to the flanks. These screens prevent effective aimed small-arms fire and neutralize enemy artillery, mortar, or rocket observation posts.

Aircraft bombs and smoke spray tanks, naval gunfire, mortar or rocket boats, or smoke boats equipped with floating smoke pots or mechanical smoke generators may be used to lay smoke across landing beaches while the landing force still is afloat.

Smoke usually alerts the enemy or draws

fire. Therefore, screens are made extensive in order to preclude forming a small target area that the enemy could search with fire. Feint or dummy screens over landing areas not to be assaulted are used to draw attention and fire. This conceals the actual point of landing, and denies information as to the size of the landing force.

In almost all cases smokescreens hamper friendly efforts to some degree. This hampering may be momentary and may affect only a small portion of the force. However, its existence must be recognized and action taken to minimize its effect. Such actions include:

1. Careful planning of the proposed screens.

2. Accurate last minute weather evaluation.

3. Careful control of the smoke by the highest tactical commander charged with the landing operation.

4. The extensive use of smoke during amphibious training and rehearsals.

The successful use of smoke in amphibious landing operations requires very precise timing and close coordination between the assault troops and surface vessels. This was very evident in the Dieppe raid. In that operation the task given to the smoke-laying aircraft was to mask the batteries on the high cliffs to the east of Dieppe during the assault and to screen the ships and craft as they withdrew. Casualties were heavy among the aircraft but there seems no doubt that the original intention of screening the batteries was successfully carried out by dropping a number of 100-pound white phosphorous bombs to windward of the batteries.

At Vaagso, seven *Hampton* aircraft came in at very low altitude and released their bombs on a fortified island affording a screen of ideal density with only 15 to

F-84F* and *F-86

20 yards' visibility. As a result the subsequent landing was unopposed. A load previously dropped on another island had effectively screened the approach of surface vessels.

The air, ground, and sea intercommunications must be of the highest order to prevent smoke interference in the battle. Some method of neutralizing enemy antiaircraft fire, either from the air or the sea, must be devised to prevent heavy losses to the smoke-laying aircraft. However, it is apparent that the obvious value of well-laid smokescreens in landing operations requires further consideration of the proper employment of this offensive weapon.

Airborne Operations

Smoke in support of airborne operations may be used during landings under suitable conditions. Extreme care must be exercised to make certain that smoke does not drift across the drop zones or landing zones during the assault phase, since the resulting confusion would affect, to a great extent, any value gained by the concealment given by the smoke to assault troops. Under special circumstances parachutists may be protected during their descent by a smoke curtain placed between enemy strong points and the friendly drop zones. Smoke curtains of this type have to be established entirely by aircraft, since smoke generator units or smoke pots would not normally be available until assault aircraft landings take place. This method of furnishing smoke protection early in an airborne operation may prove to be a decisive instrument in the hands of the combat force commander.

Precautions Necessary

A number of factors must be considered when the use of smoke is planned:

1. Smoke, if improperly placed, may blind friendly troops as well as the enemy. It should not be used where it interferes with the actions of adjacent units.

2. Smokescreens, once established, take some time to dissipate. So much smoke must not be employed that it will still obscure the objective when the attacking force approaches it.

3. Use of smoke attracts attention. Used continually, it may indicate friendly positions or reveal intentions. If possible, smoke should be placed simultaneously on several hostile positions (or dummy screening position) thus leaving the enemy in doubt.

4. Smoke must be used as part of the battle plan and not indiscriminately. Flexibility in planning is as important for smoke operations as for any other operation. Smoke plans must consider potential damage to smoke equipment and personnel by enemy action.

5. When smoke is used as a troop safety means during friendly nuclear burst, care should be taken to ensure that the smoke cloud does not rise above the intended height of burst to the weapon. If this occurs, the thermal effects may be increased.

6. In the employment of smoke, set patterns must be avoided. Deceptive screens should be varied as much as possible, since the enemy may become familiar with set patterns and thus be able to identify deceptive screen operations. To avoid this, deceptive screens should be varied in location, relation to other screens, and in starting time and duration.

7. Low altitude air defense weapons units of the present and near future utilize optical fire control means. As a result, any reduction in visibility within their vicinity would act to decrease effectiveness of these units.

Thermal Protection

Smoke may be used as a protective measure for troops during friendly use of nuclear weapons when troops are unable to protect themselves by other means.

If troops are afforded an opportunity to seek shelter before the detonation of a nuclear weapon, there is no requirement

for a thermal radiation attenuation cloud (TRAC). Any type of opaque shield which can be placed between troops and the fireball, so as to break line of sight contact, affords almost complete protection against thermal radiation. Scattered radiation at ranges where thermal is the dominant factor can be considered negligible.

There are several cases where troops have little opportunity to protect themselves against thermal radiation effect in offensive or defensive operations. These are:

1. Operations over frozen terrain.
2. Operations over rocky terrain.
3. Operations in areas of high water table.
4. Targets of opportunity during attack or retrograde movement.
5. Operations in the desert.

In the cases mentioned here thermal radiation becomes an important casualty producer. Troop safety considerations may result in an inability to strike important targets in close proximity to our troops, or withdrawal of friendly troops to a safe distance. In a fast-moving situation, the time required to relocate troops to a safe thermal distance may negate the use of nuclear weapons.

The use of smoke for attenuation of thermal effects from United States employed nuclear weapons in tactical situations where shelter is not available is feasible. Use of smoke for this purpose will enable friendly forces to remain in close contact with the enemy during nuclear attacks, thereby gaining a tactical advantage over the enemy. Also, the bonus effect produced by smoke may be a passive defense measure to protect friendly troops from thermal radiation emitted by enemy nuclear weapons. Smoke for this purpose must be established rapidly over extensive

L-19 (Bird Dog)

distances, a requirement that usually dictates the use of projected smoke sources.

From the viewpoint of cover and concealment, nuclear warfare creates certain special considerations. The desirability for concealment which impairs enemy ability to discover nuclear targets is emphasized by the great destruction which may follow a nuclear strike. However, some of the same features which provide cover and concealment may have adverse effects. Wooded and built-up areas, while providing a measure of protection from detection, may cause increased casualties from secondary blast effects and fires. Deep valleys and ravines provide varying degrees of protection from blast, thermal, and prompt nuclear radiation. Where the axis of the valley points well away from ground zero, protection is afforded; a valley where the axis points toward ground zero may channelize the blast effect and thus increase the damage. Smoke, on the other hand, will provide concealment and the bonus effect of attenuating thermal radiation. Ground smoke generating means usually are preferred for such missions as the number of aircraft required is prohibitive.

Conclusions

Smoke in World War II and Korea was used to prevent enemy observation. Its employment has been to achieve these objectives:

1. Deny information to the enemy by preventing observation over a particular area, and so to assist in achieving surprise.

2. Screen friendly troops, blind the enemy, and reduce the effectiveness of enemy fire thereby reducing personnel casualties and damage to equipment. Alternately, to make effective enemy fire impossible without a prohibitive expenditure of ammunition.

L-23 (Seminole)

3. Hamper the enemy and cause confusion.

4. Deceive the enemy by drawing his attention to a nonvital area and inducing him to expend ammunition to no effect; increasing his doubts as to the time, place, and nature of attack; and lending greater realism to a deception plan, that is, by drawing attention to established screens not covering important objects.

5. Mark profitable enemy targets for air strikes and for adjustment of artillery fires.

6. For signaling and marking purposes.

Smoke can be used on the nuclear battlefield to tactical advantage to attain surprise, combat deception, and thermal radiation attenuation.

Aerial delivery is the best method of filling the smoke requirement for some types of missions which are an Army requirement. Included are those type missions for which coverage of an extensive area for a limited period of time is required and delivery to areas which are beyond the range capabilities of Army delivery means. Such smokescreens may be employed effectively to:

1. Blind the defenses of a beach area immediately prior to the actual assault on the beach.

2. Blind coastal batteries.

3. Support the infantry or combined-arms force.

4. Screen isolated military objectives, such as bridgeheads.

5. Screen tanks or ships.

6. Cover the operations of airborne forces.

The Army quantitative requirement for aerial delivery of smoke is variable dependent upon the mission, force structure, and area of operations. An analysis of type operations should be made and quantitative requirements established for the field army.

To be fully effective, a smokescreen must be maintained continuously for the required period and have the necessary density, length, width, and height. These requirements will vary considerably with the target to be screened and with tactical considerations. Therefore, crews need careful training in the various methods of laying smokescreens.

Qualitatively, the Army requires a smoke bomb and spray capability with manned aircraft for the accomplishment of blinding smoke and smoke curtain missions in enemy dominated areas with a high degree of reliability and accuracy in time and location. The system must be immediately responsive to the field army commander.

The battlefield of the next decade will be much larger than ever before and with even less clear-cut boundaries between units. Real mobility will be the key to success and combat units will move fast, concentrate to destroy the enemy, and then disperse rapidly. Soldiers will move in aerial vehicles just above the 'nap' of the earth and carry with them new types of lightweight but potent weapons using not only conventional ammunition but also atomic rounds. Communications will be increased by new radios and relay systems using the latest techniques of earth satellite transmission and of bouncing signals off the moon.

Lieutenant General Arthur G. Trudeau

OPERATION *GREIF*

Major Burton F. Hood, ***General Staff***
Office, Deputy Chief of Staff for Operations, Department of the Army

A special German task force was infiltrated behind American lines in an attempt to kill the American First Army leaders it now can be disclosed. . . . This special German force was part of much larger saboteur battalions dropped behind American lines during the current German counteroffensive.

—Reuters Dispatch,
New York Times
27 December 1944

THE German use of deception to enhance the shock of their offensive in the Ardennes in December 1944 is a remarkable example of a form of Unconventional Warfare that is too often neglected in tactical studies. The Battle of the Bulge will best be remembered in history as the death throe of the Wehrmacht. But perhaps the most vivid memory in the minds of most of the participants of that great battle was best described by General Omar N. Bradley as the spectacle of "half a million GI's . . . playing cat and mouse with each other every time they met."

From the moment when a jeep load of English-speaking Germans wearing American uniforms was captured and admitted that they were the vanguard of a major effort to destroy, confuse, and subvert behind the Allied lines, the potentialities of such an action were obvious and the alarm spread like wildfire. Reports of encounters began to filter in from all along the front, and, indeed, from most of Western Europe. Paris police tightened local security with the observation that not since the darkest days of 1940 had one Frenchman looked at another with such suspicion. All manner of mischief ranging from pillage to political assassination was attributed to the Germans. A bank in Southern France was reported robbed by a specially parachuted group.

The fact that the leader of this audacious expedition was alleged to be Colonel Otto Skorzeny lent credence to the wild rumors, for here was a man who was capable of the most incredible exploits—his liberation of Mussolini was still fresh in the public mind. General Eisenhower's headquarters picked up "reliable" reports that the primary mission of the Skorzeny group was to kill or capture the supreme commander. Security officers turned Supreme Headquarters, Allied Expeditionary Forces into a bristling fortress, and restricted the general's movements.

At the front the apprehension and mounting suspicion caused by the infiltrating "battalions" placed an almost intolerable restriction on communications. Staff officers driving from one unit to an-

The use of deception in modern warfare is not obsolete. Small, well-trained, highly motivated groups of determined men armed with tremendous destructive power may be the key to future battlefield success

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other found their way barred by innumerable road blocks manned by heavy fingered guards. Failure to respond to any number of security checks brought delays and time-consuming interrogations. More than a few futilely protesting soldiers were arrested for wearing items of German uniform or failing to produce their identification tags. No one was excused from this exercise including the Army commanders. General Bradley described the exasperating situation that forced him to prove his nationality:

The first time by identifying Springfield as the capital of Massachusetts (my questioner held out for Chicago); the second time by locating the football guard between the center and tackle on the line of scrimmage; the third time by naming the current spouse of a blond named Betty Grable.

The cumulative effect of this hypertension was extremely damaging to the morale of the Allied armies to say nothing of the increased burden it placed on the requirements for rear area security.

Fact versus Fiction

Let us now separate fact from fiction. News reports of the time led the public to believe that battalions of parachutists were dropped behind the American lines, dressed, equipped, and trained as Americans with the objective of converging on Paris and destroying the Supreme Allied Headquarters. Perhaps the most charitable observation that can be made of these reports is that they were the product of the hysteria brought on by the shock and fury of the unexpected German assault. It should be noted, too, that the exaggerated reports were not confined to irresponsible press releases, for official communiques and intelligence reports also carried accounts of the parachutists and the havoc they wrought behind the lines.

It was not until after the war when it was possible to interrogate the German leaders that the enormity of the extravagant claims of the deceptive operations in the Ardennes came to light. Many an intelligence specialist was abashed to learn that:

1. None of Skorzeny's forces were parachuted behind Allied lines, and actually only 44 men were successfully infiltrated through the lines.

2. The Germans, far from being completely equipped with American material, had only two *Sherman* tanks and a handful of miscellaneous equipment.

3. The mission of the unit was never to capture General Eisenhower or other American leaders, but rather to create confusion so as to assist the crossing of the Meuse River by elements of the main battle force.

Concept

Viewed dispassionately today, Skorzeny's deceptive operations solicit further study by military students, not only for historical interests, but for the implications they may have on their use in future struggles.

The concept and original planning for Operation *Greif* is obscure. Presumably it originated in the German High Command; possibly by Hitler himself in one of his intuitive planning studies. Imple-

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mentation of the plan began in the latter part of October 1944, when Colonel Skorzeny, who was then the Commander of the German Commando Center at Friedenthal, was summoned to Hitler's East Prussian Headquarters and was briefed by the Führer himself. He was told that he was to form a special brigade which would support the Sixth Panzer Army in its major effort to split the Allies and drive to Antwerp. (Figure 1.) The brigade was to fight in an unconventional manner. It was to be equipped completely with American and British material, and, as far as possible, it would be manned by English-speaking officers and men. Skorzeny was assured that the High Command had gathered enormous reserves of artillery and Luftwaffe support to ensure success of the breakthrough.

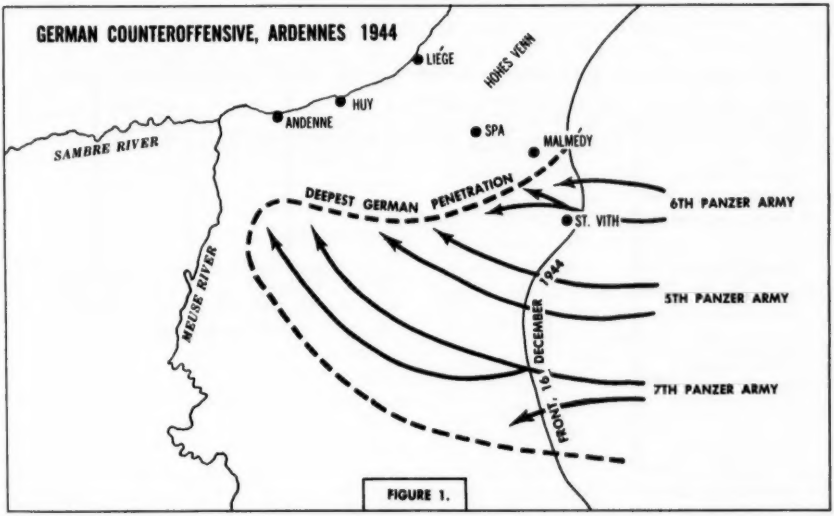

FIGURE 1.

Immediately after the meeting with Hitler, troops began to arrive, and training for the unique operation began. It soon became apparent, however, just how far the High Command had isolated itself from reality. A blundering order to all units of the Wehrmacht for all English-speaking men to report to Friedenthal produced only 600 volunteers. A cursory examination soon revealed, moreover, that no more than 10 spoke fluent English; some 40 spoke halting English, and about 150 others could barely make themselves understood. The equipment picture was no brighter. Two *Sherman* tanks and 12 German *Panthers* together with 10 British and American reconnaissance cars were the nucleus of the armored support available. What clothing that was supplied consisted of a nondescript mixture of captured uniforms that could deceive only a very confused opponent.

At this stage of the war expediency was the byword of the German effort, and so Skorzeny's staff frantically attempted to patchwork a brigade to satisfy the requirement. The language problem was the most immediate obstacle, but very little could be accomplished in the short time before the attack. Schools were organized and all personnel were drilled in English including American slang. Fi-

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nally, in desperation, Skorzeny instructed most of his men to keep a grim faced silence if they ran into the Americans. There was also instruction in how to act "GI"; the mysteries of chewing gum and field stripping a cigarette were explained; and an attempt was even made to have a few of the more advanced pupils mingle with American prisoners of war to observe the finer points of behavior. The equipment shortage was somewhat alleviated by camouflaging German vehicles to resemble American tanks. Some jeeps were "midnight requisitioned" from nearby units. Artillery and ammunition, however, remained in short supply.

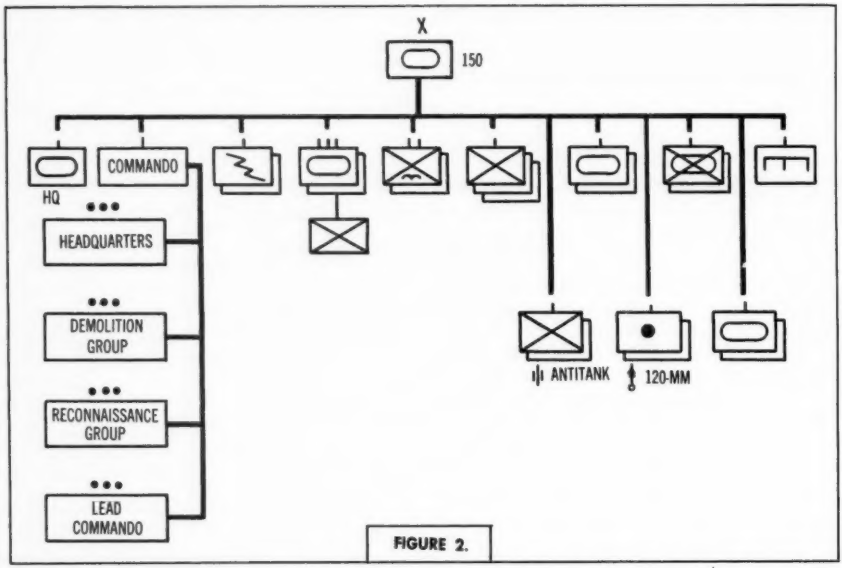

FIGURE 2.

Organization

Skorzeny's mission, as he received it from Hitler, was twofold: first, to provide units to follow the advance of the assault divisions and, at the proper moment, pass through the broken front and move rapidly to seize and secure the Meuse bridges; and, second, to infiltrate the lines with small groups to obtain information and create confusion. To accomplish this mission he had to design a unique organization that probably can best be described in today's terms as a reduced strength armored division, reinforced. (Figure 2.)

The infiltrating forces in the brigade were grouped into a Commando Company. This unit contained the most fluent English speakers and had the best of the meager supply of Allied equipment. Functionally, it was subdivided into three groups:

1. *Demolition group.*—This group was organized into smaller squads of five to six men each whose job it was to destroy bridges, munitions, and gasoline dumps.

2. *Reconnaissance group.*—Three- to four-man squads in this group were to reconnoiter in depth east and west of the Meuse River to report information on enemy armor, artillery, and troop movements. They also were instructed to give

false commands to enemy units they encountered; to reverse road signs; to remove minefield signs; and to put minefield markers on lines of communications to mislead and cause road jams.

3. *Lead commandos.*—These squads of three and four men each had the mission of disrupting communications by cutting telephone wires, destroying radio stations, and giving false commands.

The entire Commando Company had American uniforms and an adequate supply of jeeps. Meticulous care was exercised in providing these men with proper insignia and identification papers. The highest American rank simulated was that of colonel.

The 150th Panzer Brigade was composed of three combat command headquarters and various tank, armored infantry, and parachute infantry units supported by signal, engineer, and maintenance units. The brigade was woefully weak in artillery support with only two heavy (120-mm) mortar companies. The combat commands were a combination of the units in the brigade. Two tank and one infantry commands were organized on a semipermanent basis. Each tank command consisted of a small staff, a communications platoon, one company of tanks, three companies of infantry, two platoons of heavy mortars, two antitank platoons, two platoons of armored infantry, one platoon of engineers, and one maintenance platoon. The infantry command was similarly organized except that it had no tanks. While two infantry battalions of the force were parachutists, there was no planned employment of these units in an airborne role.

The mission of the 150th Brigade was to seize undamaged at least two Meuse River bridges at Amoy, Huy, or Andenne. The three combat commands were placed in direct support of the 1st and 12th SS Panzer Divisions and 12th Volks Grenadier Division—the three assault divisions of the Sixth Panzer Army. Their action was to be initiated when the attack of the assault divisions had reached Hohes Venn, a plateau running roughly northeast and southwest from Spa. At that time the commands were to move in three parallel columns through the assault divisions and to their objectives in six hours. All plans were contingent upon an expected collapse of the Allied front on the first day.

Employment

The most optimistic hopes of the German High Command were fulfilled on the morning of 16 December. Effecting complete surprise and aided by extremely bad weather that hampered ground and air support for the defenders, the Fifth, Sixth, and Seventh Panzer Armies drove a deep salient into the Allied lines. Such a situation was ripe for exploitation by Skorzeny's forces. In the first three days of the attack, four reconnaissance squads, two demolition squads, and three lead Commando squads were sent through the Allied lines. In all, only 44 men were used on this mission. All but eight returned successfully. What did this handful of men accomplish? Here, historical records are incomplete, but in a postwar interrogation Skorzeny recalled:

In the first two or three days, when your positions were extremely disorganized, we were able to get some information from these commando groups. The following are some of the facts which these units brought back to me:

(a) A jeep drove through Malmédy and discovered that the town was very lightly held.

(b) Enemy movements were spotted south of Liége.

(c) We discovered that all airports east of the Meuse River had been evacuated. This was very important to us because we then knew that the enemy air forces would not be employed immediately.

(d) We located munitions dumps at

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Liége and Huy. One group destroyed a small ammunition dump.

(e) We located one gasoline dump, which I think was in the neighborhood of Vaux Chauvenne.

(f) One group claimed to have misdirected an entire American regiment, but of course we cannot be sure that this is so. However, we did monitor some American broadcasts which mentioned the fact that a regiment had been sought for two or three days.

While these incidents were a significant part of the German effort, they do not match the greatest contribution of the Commando Company, which was, of course, the imposition of the paralyzing mistrust engendered in the Allied front.

The combat commands of the brigade were not so spectacularly employed. The Sixth Panzer Army did not enjoy the rapid advances of the Fifth and Seventh Armies to the south. It was its misfortune to run directly into the American First Army in the act of advancing toward the Roer Dams, and the determined defense of key strong points such as St. Vith doomed the German effort. Dependent as it was on a complete rupture of the Allied lines by the Sixth Army, the 150th Brigade waited in vain for the order to advance. After two days of interminable delays it became apparent that the opportunity to exploit had passed, so Skorzeny assembled his commands and fought them as a conventional force in the vicinity of Malmédy. Lack of artillery support, however, limited the capability of the brigade, and it played no outstanding part in the grinding withdrawal from the Ardennes.

In all, Skorzeny's brigade was in action for only 13 days, and, in retrospect, it did not change the outcome of the battle significantly. But, in fairness to the unit, it must be remembered that it was hastily assembled, ill equipped, and never employed in the role for which it was fashioned. Perhaps its greatest contribution was its potential. The problems of securing rear area installations against infiltrating groups dressed and trained to operate as friendly forces were multitudinous and even to accomplish the task partially distended the frontlines at a moment when combat strength was critical. The surprising fact is that the actual accomplishments of Skorzeny's brigade trailed so far behind Allied capability estimates.

Observations

Deception is as old as warfare itself. The Trojan Horse technique is as applicable today as it was centuries ago. The most successful military leaders always have depended on the many facets of deception to lend surprise to their operations. The confusion created by Skorzeny's infiltrating forces was almost exactly duplicated 82 years before by Grierson's famous raid during Grant's Vicksburg Campaign which is described in M. F. Steel's *American Campaigns*:

With barely 1,000 horsemen Grierson had ridden entirely through the state . . . destroying many miles of railway and telegraph lines and much other property. 'But, far more important than all this, he had distracted the enemy's attention in an extraordinary degree at a most critical moment'—while Grant was making his preparations to cross the Mississippi . . . the Confederates were kept in a wild state of ignorance, excitement, and alarm. 'The most exaggerated rumors were current of' Grierson's 'presence in a dozen places at once,' and large infantry detachments were sent out from almost every garrison to try to cut him off. . . . In its strategic effect, this was, perhaps, the most successful cavalry raid of the Civil War, or of all modern wars. . . .

No, confusing the enemy by creating chaos behind his lines is certainly not new, but that is not to say that it is not as useful a technique today as it ever was. On the contrary, with modern weapons and

the wide open troop deployments that may be expected in the future, there probably will be even more opportunity to employ this element. The use of small, well-trained, highly motivated groups of determined men armed with tremendous destructive power may be the key to future battlefield success. Rapid technological progress in communications and mobility brings long-range reconnaissance to the imminent future. The packaging of nuclears in portable loads opens a Pandora's box of unpleasant possibilities.

Certainly the potentialities of the highly successful techniques demonstrated by Skorzeny and Britain's David Sterling were not lost to the Communists. On at least two occasions after the war, the Russians unsuccessfully attempted to kidnap Skorzeny; probably in an attempt to elicit from him some of the details of his unconventional tactics. They were more successful, however, in absorbing the lessons from these exploits, for observers in the Indochina war noted that the Vietminh long-range patrols and infiltration tactics closely paralleled those of World War II. Again, in Korea, one of the most nagging problems faced by United Nations commanders was the line crossing of Communist forces and the subsequent destruction of key installations to the rear. The use of these techniques is not just a theory—it has been put to the test and accepted by world-wide Communist forces.

One of the basic problems that a soldier wearing his opponent's uniform must face is, "What will be my status if captured?" An annex to the Hague Convention of 1907 forbids fighting in enemy uniform. The term "fighting," of course, is somewhat nebulous. Is reconnaissance or patrolling fighting? Skorzeny was assured by a senior German Staff Judge Advocate that small Commando units were likely to be judged as spies, but that it was a legitimate *ruse de guerre* to wear the enemy's uniform as long as you do not actually fight in it. This is, of course, a very fine legalistic point and is completely dependent upon the jurisprudence of the power judging the offense. In fact, however, Skorzeny was tried by a War Crimes Commission in August 1947 for a violation of the Hague Convention and was acquitted of the offense. Evidence was submitted that indicated that wearing the enemy uniform was not exclusively a German predilection. In substance then, from the legal standpoint, the Hague Convention does forbid fighting in enemy uniform, but there is precedent for acquittal of the charges on proof that the enemy employed the same deceit.

Conclusions

One of the great surprises that came out of the study of World War II was the revelation that a mere platoon of Germans, dressed in American uniforms, infiltrated the Allied lines during the Battle of the Bulge, and reaped a harvest of confusion completely disproportionate to their numbers. This incident is unimportant in itself, but it furnishes another example of the ability of small groups of well-trained men to accomplish military miracles by confusing their opponents. The use of deception is not new to warfare, but the important lesson here is that it is not obsolete because of this. On the contrary, there is evidence that the Communists are embracing all forms of Unconventional Warfare, and the Western World will be less than circumspect if it does not fully explore the full potentialities of this type warfare. Small groups of determined men can still influence great issues by bold exploit.

XUM

Umpire Control
Exercise Caribou Creek

Colonel Willard Pearson, *Infantry*
Assistant Chief of Staff G3, United States Army, Alaska

An account of the tactical play of Exercise Caribou Creek, *written by Major General Gilman C. Mudgett, appeared in the August 1959 issue of the* MILITARY REVIEW.—*Editor.*

EXERCISE *Caribou Creek*, conducted in Alaska in February 1959, not only highlighted factors relative to organization and tactics required in the northland trackless areas, but proved a good test vehicle for the umpire control system.

The following aspects of the maneuver had to be considered in constructing an umpire organization to control the tactical play:

1. It was a free maneuver with no scenario to follow.

2. The exercise was conducted in an undeveloped area with a nonexistent road net.

3. Two reinforced battle groups opposed each other, the 2d Battle Group, 503d Airborne Infantry, from the 82d Airborne Division, and the 1st Battle Group, 23d Infantry, US Army, Alaska. These battle groups were given an independent mission involving movement to contact, open flanks, and the employment of attached and supporting units. Troops possessed a nuclear capability, and transportation helicopters and armored personnel carriers were employed freely.

4. Extensive patrolling and contact by small, widely dispersed units, characteristic of northern operations, had to be taken into account.

In addition to their primary mission of controlling tactical engagements, umpires were assigned a secondary mission of concurrently evaluating doctrine and organization.

Area System Studied

In previous Department of the Army exercises in Alaska, as well as in Battle Group Army Training Tests, the unit system of umpiring described in Field Manual 105-5, *Maneuver Control*, was used. In searching for ways to improve umpiring techniques in Exercise *Caribou Creek*, attention was attracted to the Final Report of Exercise *Eagle Wing* conducted at Fort Campbell in 1957. This report described in detail a new system of maneuver control —the area umpire system.

An area umpire system was first proposed by Major General Hamilton H. Howze in November 1955. His proposals, representing rather drastic revisions of present procedures, were designed to accomplish the following:

1. Obtain more objective decisions by

The Combined Unit-Area Umpire System, used in Exercise* Caribou Creek *in Alaska, proved superior to the unit system customarily employed in maneuvers and was a progressive step in umpire organization and control

removing allegiance which springs from assignments of umpires to units.

2. Speed tactical decisions by eliminating arguments between umpires of equal rank representing opposite sides.

3. Simplify decision making by eliminating complicated systems of computing firepower of opposing sides and relying on the umpires' comparative evaluation of the opposing commanders' use of terrain, cover, maneuver, initiative, surprise, firepower, strength of opposing sides, and other factors that might have a bearing on the outcome of an engagement.

4. Achieve greater flexibility by permitting the shifting of umpires to the critical area of troop contact where they are most needed.

5. Economize on manpower.

After study of General Howze's proposals and the Final Report for Exercise *Eagle Wing*, it was decided to employ the area concept of umpiring rather than the unit system. The difference between the two systems is simple.

In the unit system umpires are assigned to units. When units come into contact, umpires assigned to these units confer and compare firepower of their respective sides and decide the results of the engagement.

In the area system, personnel are organized into various umpire action teams. These teams, operating under control of the chief umpire, move directly to the scene of contact and referee tactical engagements.

Organization

The umpire organization had to be designed to take into account the characteristics of the exercise and mission of the umpires as previously described. The initial organization was employed in a map maneuver and subsequently tested at an umpire's school. After a number of revisions the organization was finalized as indicated in Figure 1.

From Figure 1 it may be noted that the chief umpire on the maneuver director's staff worked directly under the chief of staff. The chief umpire was assisted by a small staff organized into an operations center. This center initially briefed, dispatched, and assigned the umpire action teams, handled administrative matters for umpires, and kept the maneuver director headquarters informed. One officer in the operations center was an artilleryman responsible for advising the chief umpire on artillery matters. He coordinated the employment of all artillery fire marking and relay teams.

Teams operating directly under the chief umpire are shown on the first horizontal line below the chief umpire block. (Figure 1.) The teams comprised the umpire pool. They operated from the pool on an on-call basis.

The battle group action teams are shown first. Two were utilized—one in Aggressor area and another in the US Forces area. They controlled and coordinated the employment of two or more company action teams and all artillery fire marking teams whenever the latter were in the area of responsibility assigned the battle group action team.

Company Action Teams

Company action teams were the heart of the umpire system. Five were employed. They were dispatched to areas where units

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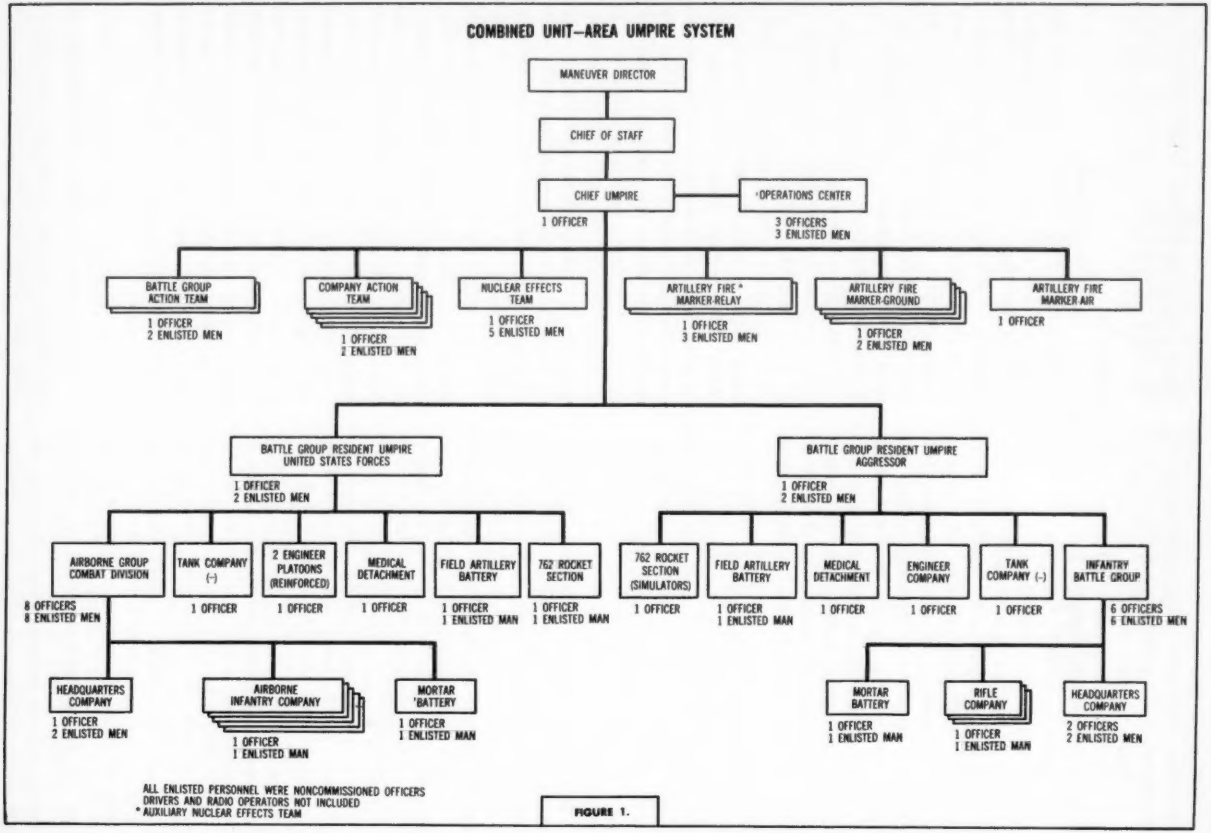
Colonel Willard Pearson served in the Southwest Pacific in World War II. From 1946 to 1950 he was with the 82d Airborne Division. In the early days of the Korean conflict he was assigned to the Korea Military Advisory Group as senior advisor of the 6th Republic of Korea Division, and later was executive officer, 21st Infantry, 24th Division. Upon his return to the United States in 1951, he obtained a Master's degree in Personnel Management from Columbia University. His next assignment was Chief, Plans Division, G1 Section, Headquarters United States Continental Army Command, followed by attendance at the US Army War College in 1956-57. He is now Assistant Chief of Staff G3, United States Army, Alaska, following a tour as commanding officer of the 1st Battle Group, 9th (Manchu) Infantry.

COMBINED UNIT–AREA UMPIRE SYSTEM



ALL ENLISTED PERSONNEL WERE NONCOMMISSIONED OFFICERS
DRIVERS AND RADIO OPERATORS NOT INCLUDED
* AUXILIARY NUCLEAR EFFECTS TEAM

FIGURE 1.

were in contact or were expected to make contact. Once on the scene, they rendered decisions based on scheme of maneuver, terrain, surprise achieved, firepower, and strengths of opposing units. These decisions were given to the company commanders who, in turn, reported them to their respective battle group commanders.

Company action teams marked artillery fire and assisted the nuclear effects team in marking areas of destruction. The members of these teams were excellent skiers. They had to be in topnotch physical condition and capable of operating off vehicles utilizing their portable *AN/PRC-10* radios.

The nuclear effects team fired, marked, and assessed personnel and materiel damages from nuclear shots. This team used a radiation simulator to test and train unit radiological survey teams. Resident umpires, company action teams, and artillery fire marking teams were called upon to assist the nuclear effects team in marking off areas of destruction and contamination. The team was headed by an officer trained as a special weapons analyst and used the *H-21* (*Shawnee*) helicopter as the primary means of transportation. The *AN/ARC-44* radio in the helicopter provided communications with other umpires in the area of the nuclear shot.

Artillery Fire Marking Teams

There were three types of artillery fire marking teams.

1. Artillery fire marking teams-relay, transmitted fire missions from the resident unit umpire with the firing battery to the artillery fire marking teams-ground, or the artillery fire marking teams-air. These teams also served as auxiliary nuclear effects teams. Equipped with an armored personnel carrier they had the capability of marking nuclear fires day or night and under practically all conditions of terrain and weather.

2. Artillery fire marking teams-ground, upon receipt of a fire mission, proceeded to the coordinates of the concentration, marked the fire by simulators, assessed damages and casualties, and, after marking fires, delivered shell reports to the resident umpires or to a member of the unit being shelled.

3. Artillery fire marking teams-air, marked artillery strikes in rear and in assembly areas using pyrotechnics.

All action teams, from the battle group action teams to the artillery fire marking teams-ground, were self-sufficient and capable of controlling tactical operations whenever and wherever required. They were not dependent upon or attached to any of the units. This was done to preclude developing any loyalty or allegiance to anyone except the maneuver director through the chief umpire.

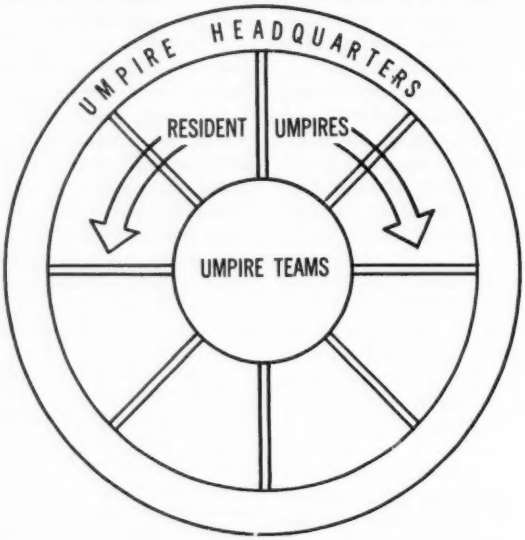
Resident Umpires

The remainder of the organization chart outlines the resident umpire structure. The organization for the Aggressor and US Forces was the same. A captain or major was assigned to each of the participating battle group headquarters as the senior resident umpire. Lieutenants were assigned to the subordinate units within the battle group.

Resident umpires remained with their units throughout the exercise. They reported through umpire channels the logistical, administrative, and tactical plans of the unit to which assigned. They required that realistic consideration be given to normal time and space factors. In addition, they ensured that the logistical situation was adequate to support the tactical operations; if not, appropriate restrictions were placed on the unit.

Resident umpires were prepared to assist company action teams in umpiring an operation as well as umpiring isolated actions such as parachute, guerrilla, gas, or helicopterborne attacks. Resident umpires described the tactical situation of their units to the company action teams needing this information. They assisted the nuclear

COMBINED UNIT–AREA UMPIRE SYSTEM



The umpire teams form the center or hub of the umpire system. Working directly under the chief umpire, they are responsible for controlling tactical actions.

Resident umpires provide the extra arms to assist the umpire teams. They are attached to participating units, and report on their unit's tactical, administrative, and logistical plans.

The umpire headquarters, the outer rim of the organizational wheel, supervises the entire system.

FIGURE 2.

effects team in marking off areas of destruction and, in emergencies, they marked artillery fire. They were some of the busiest umpires in the exercise.

Modified System

It will be noted that the assignment of resident umpires is reminiscent of the unit umpire system. Their primary duties, however, dealt with the logistical and administrative matters of the unit to which assigned and secondarily to the tactical phase. Since sufficient company action teams could not be provided to umpire every conceivable point of contact, the resident umpires served as a backup for

the company action team. They were also assigned the principal mission of evaluating doctrine and organization.

From the foregoing description of the umpire organization, it can be seen that the "pure" area umpire system initially proposed by General Howze was modified to incorporate certain features of the standard unit system. For this reason the umpire organization used in Exercise *Caribou Creek* was called a "Combined Unit-Area Umpire System." Functioning is indicated in Figure 2.

Action teams and artillery fire marking teams were provided with tracked vehicles (*M59* armored personnel carriers or *M76 Otters*) and suitable vehicular radios. Resident umpires were provided with one-quarter ton trucks as well as with skis and portable radios. All means of transportation were used. Umpires walked, skied, rode, flew, or jumped to the scene of action.

Conclusions

How well did the system function?

The noticeable advantages resulting from the use of the umpire system in Exercise *Caribou Creek* were as follows:

1. Increased flexibility provided the chief umpire in employing his personnel.
2. The objectivity of umpire decisions.
3. The speed of umpire decisions.
4. Modest savings in manpower. Using Exercise *Cold Bay* as a basis of comparison, a comparable maneuver held in Alaska in 1958 in which the unit system was employed, approximately ten percent savings in manpower were effected.

Over-all the system proved superior to the unit system customarily employed in maneuvers.

Three nuclear shots were fired, two at night and one during the daylight hours. Planes and helicopters were declared out of action for violating the no-fly line or height restrictions imposed thereby ensuring realistic play of Army aviation. Troops who parachuted or air landed behind enemy lines were accompanied by umpires to ensure credit was given for their actions. Night action involving contact by two frontline rifle companies was adequately controlled by one company action team and the two resident umpires accompanying the units. Artillery fires were realistically marked day and night. One kamikaze attack on a "Chopper-John" by a helicopterborne engineer killer team was effectively umpired.

The umpire organization was not given as rugged a test as desired due to the lack of early contact by opposing forces. When contact was made umpires were in position to handle all critical actions.

There was general agreement among the participating units and umpires that the organization used in the exercise was a progressive step in umpire organization and control. Favorable consideration is being given to using the system in the next annual Department of the Army maneuver scheduled for 1960, Exercise *Little Bear*.

Our Army is modern in many vital respects. It is modern in its outlook and its thinking. It is modern in its knowledge, in its tactics, and in its organization. It is looking always to the future, and striving with all its energy to be ready for that future.

General Lyman L. Lemnitzer

OBJECTIVES AND METHODS OF COMMUNIST GUERRILLA WARFARE

Lieutenant Colonel George B. Jordan, *Infantry*
Inter-American Defense Board, Washington, D. C.

THE over-all Communist menace has focused attention on guerrilla warfare and its possible application by Communist elements in the Western Hemisphere. The Communists are experts in guerrilla warfare and use it as another means of fomenting revolution and debilitating those governments which are not economically or politically stable. Therefore, this article is written to provide background on the historical and military meaning of guerrilla warfare, on what guerrillas can achieve under favorable conditions to obtain their objectives, and on what can be done to counter guerrilla actions.

By definition, the word "guerrilla" means a "little war" and it has come to denote the irregular, nonprofessional civilian-soldier who takes up arms to fight against professional military forces. Guerrilla warfare also has been defined as that phase of Unconventional Warfare conducted by predominantly indigenous forces organized on a paramilitary or military basis to harass and eventually defeat the enemy. There are numerous recorded instances where guerrilla warfare has achieved its purposes when conventional type of warfare had failed.

Guerrilla warfare is as old as history, yet until recent times little heed has been paid to it by professional military men in studies of warfare in general. There has been a reluctance on the part of professional officers to participate in nonethical movements. History shows us that guerrilla action has chiefly been the weapon of partisans, revolutionaries, rebels, and more recently of Communist inspired movements. Well-known examples of guerrilla operations are to be found as far back as 360 B. C. in China and as recently as today in Cuba. The Communist nations of China and the USSR have produced professionals in the field of guerrilla warfare as evidenced by such leaders as Mao Tse-tung and Stalin. It was Stalin who utilized the teachings of Karl Marx, "That the end justified the means" and applied this concept to weaken his opponent while strengthening the Communist States. For example, the Soviet States are continually improving their own internal security while attempting to undermine the internal security of anti-Communist nations. Karl Marx' remarks on guerrilla warfare are especially noteworthy when considering Communist actions.

A nation fighting for its liberty ought not to adhere rigidly to the accepted rules of warfare. Mass uprisings, revolutionary methods, guerrilla bands everywhere; such are the only means by which a small nation can hope to maintain itself against

Additional emphasis on antiguerrilla measures should be observed in the combat training of our military forces. Details as to organization, tactics, and methods of operation of guerrilla units should be included

an adversary superior in numbers and equipment. By their use a weaker force can overcome its stronger and better organized opponent.

Stalin, Mao Tse-tung, and Ho Chi Minh have been among Marx' most apt pupils.

Studies of historical examples have pointed out emphatically that to combat guerrillas is expensive in terms of manpower. For example, in World War II it was estimated that in two years of combating guerrilla warfare, the German Army employed in rear areas 300,000 soldiers or the equivalent of 15 German divisions in a period when every soldier was needed at the front. In the Korean conflict the United Nations forces had to assign four of its 10 divisions to combat partisans in rear areas. In Greece 200,000 Greek National troops were employed to defeat 30,000 guerrillas. In Cuba Prime Minister Fidel Castro with a small force which grew to a maximum estimated strength of 6,200 was able with some support of the Cuban people to overthrow the Batista forces.

Lieutenant Colonel George B. Jordan is a graduate of the University of Arizona and received his commission in 1941. During World War II he was assigned to the 124th Cavalry Regiment (Special), a part of the Mars Task Force which operated as a long-range penetration unit in Northern Burma. He was assigned to Military Government, Ryukyus Islands, for a two-year period, and after completion of the Advanced Course of the US Army Infantry School, was assigned as PMST, Phoenix High Schools in 1949-50. He was graduated from the U. S. Army Command and General Staff College in 1952, and then joined the 1st Infantry Division in Europe where he commanded the 3d Battalion, 26th Infantry. Other assignments include duty as G3, 9th Infantry Division; Chief of the Operations Branch, G3 Section, Headquarters 6th Army; and Senior Advisor of the Quang Trung Training Center in Vietnam. In January 1958 he was assigned to the staff of the Inter-American Defense Board, Washington, D. C., where he is presently a member of the Intelligence Committee and US Army representative on the staff.

Significant Problem

A few years ago General Alfred E. Gruenther, United States Army, estimated that it took 10 men from the regular forces to nullify one guerrilla. By simple arithmetic, one can see readily that the strength of military forces needed to combat guerrillas could reach phenomenal numbers; the significance of the problem cannot be underestimated. For example, if country "X" were to have 3,000 personnel engaged in guerrilla activities, it is estimated by the above mathematical equation that it would take approximately 30,000 troops to neutralize them; and this figure in many countries far exceeds the strength of their entire military forces. Therefore, the importance of this problem cannot be overemphasized particularly as a tactic employed or exploited by international communism to achieve world domination.

Many military strategists believe that in the event of a nuclear holocaust the only type of ground action possible in the Western Hemisphere would be small unit actions for which guerrilla warfare is well-adapted. However, it seems unlikely that the Communists would risk a major nuclear attack as long as such action would bring massive retaliation. Such action would result in such general destruction on both sides that it would not serve their purpose. Therefore, it seems more probable that the agents of international communism will follow a course of action which will result in "brush type" wars or guerrilla actions.

Since guerrilla warfare is inexpensive and can be used to exploit an area where a foothold has been gained, it is necessary to be ready to combat this type of warfare and study its techniques and methods and their application. Communists are experts in the field of guerrilla warfare. It is imperative that the Free World study, understand, and prepare for such actions

in any future conflicts, be they "brush fires," minor revolutions, or major conflagrations involving the use of nuclear weapons.

Objectives

In studying the historical precedents of guerrilla warfare and its form of employment, it can be concluded generally that guerrilla warfare is adopted for one or more of the following reasons:

1. To assist the regular armed forces in operations.
2. To defend the country as a last recourse when the regular armed forces have been routed.
3. To instigate a national action to regain the liberty of a country subjugated by the enemy.
4. To overthrow a dictatorial or tyrannical form of government.
5. To harass and weaken the existing government causing it to fall so as to permit the establishment of a new government.

There are many historical examples which can be used to support the statement that even though certain aspects of guerrilla warfare may be similar, there are many guerrilla operations conducted in which the motives and purposes differ. For example, Soviet guerrilla activities against the German Army in World War II were primarily to harass the German rear and function as an intelligence agency. This objective certainly varied from the motives of Ho Chi Minh in French Indochina and Mao Tse-tung in China; their purposes were to overthrow the recognized governments of that period.

An important point to remember about guerrilla warfare is that often Communists align themselves with what may be a justified revolutionary movement to implement Communist strategy of creating crises and weakening the political, economic, and military structure of a government. Once a government falls, the Communists move in and seize control.

Through the employment of guerrilla warfare, ultranationalistic and communistic movements now are able to achieve their purposes without resorting to an all-out conventional type warfare. The principles of war which are applicable to regular warfare are likewise applicable in varying degrees to guerrilla warfare and might well be termed the general rules of military strategy. In addition to the general principles of war, certain other conditions or characteristics have been found to be essential to wage successful guerrilla warfare.

Public Support Necessary

There are certain characteristics identified with successful guerrilla operations which include the exploitation of an unstable political situation, the gaining of general or local public support, or the emphasis on certain principles of war, such as the advantageous use of terrain and exploitation of surprise. Of these the political situation is of primary importance. There must be a cause or grievance against the constituted government behind which guerrilla units can rally support and sympathy of the civilian population. This sympathy can be built up through incessant propaganda so as to gain control of public opinion. Very often this is achieved through intense "hate" campaigns operating behind the popular theme of nationalism. This theme was used very effectively by Communist leader Ho Chi Minh against the French in the period of 1946-54 in Vietnam.

It is easy to visualize how a people with a strong national desire for independence, liberty, or other worthy causes might inadvertently fall under the control of the Communist Party and become a pawn in the international chess game of irregular warfare, cold or hot. Movements which start out as insignificant guerrilla activities with proper leadership sometimes can be expanded into large-scale partisan actions involving the masses of civilian pop-

ulations, and can result in the overthrow of the duly constituted government. This is especially true when that government opposes Communist ideology. Communism associates itself with dissident elements, strives for popular support, and because its leaders are trained in organization, often gains control of the national movement in question.

To succeed, guerrilla forces strive to have the political sympathy of the local civilian population, because it is they who provide information, recruits, supplies, food, and funds. Since the guerrilla is a civilian who has taken up arms and springs from the people, he must have public support. This support, however, is not always given voluntarily, but at times is obtained through terrorizing the community.

The importance of maintaining a good public attitude and associating it with popular support to achieve political objectives is summarized quite well in the following quotation from Mao Tse-tung:

If guerrilla warfare is without a political objective, it must fail; but if it maintains a political objective which is incompatible with the political objectives of the people, failing to receive their support, then, this too must fail. This is the basic reason why guerrilla warfare can only be a form of revolutionary war. This is because guerrilla warfare is basically organized and maintained by the masses, and once it is deprived of these masses, or fails to enlist their participation and cooperation, its survival and development is not possible.

The support of government, either its own, one in exile, or one sympathetic to the guerrilla's cause, is needed to provide special equipment, arms, ammunition, and direction. Policy guidance is provided at the highest level. This ensures coordination and direction of the masses in the pursuit of national objectives. The need for centralized policy is summarized by Mao Tse-tung in his book, *The Strategy of Partisan Warfare*, in which he states:

Without centralized strategic command the partisans can inflict little damage on their adversaries, as without this, they can break down into roaming, armed bands, and then find no more support by the population.

To ensure unity of action, the organization and direction of guerrillas must emanate at the highest military and political level during hostilities. This direction should also continue after hostilities have ceased to prevent guerrillas from falling under control of dangerous political elements.

Control

Probably one of the most important principles is *control*. The general headquarters exercises absolute centralized control of policy, discipline, ethics, and political ideology. The actual conduct and basic responsibility for operations is decentralized to the guerrilla band leader. Centralized control ensures coordinated action and forestalls the destruction of a facility or the assassination of a person who may be useful at a later date. Generally, the best results in guerrilla warfare have been obtained through using many small bands numbering about 50 men. Anything larger tends to become unwieldy and more difficult to conceal and to supply. Experience has proved that many small units, acting under independent leadership and centrally coordinated by a general headquarters, operate with maximum efficiency. Tactical missions can be carried out effectively only when the details of execution are decentralized to the small, self-contained guerrilla bands.

Simplicity, informality, and evasiveness provide the guerrilla with his strength. Since a guerrilla assumes the role of a "Dr. Jekyll-Mr. Hyde" character, he is difficult to fight because he cannot afford to be recognized. His effectiveness depends upon his ability to lead two lives. In Viet-

nam the French troops rarely came upon an enemy soldier in the daytime. By day, all appeared peaceful as the peasants worked their rice fields, and it remained that way until nightfall when these "peaceful peasants" became guerrillas and under the cover of darkness attacked the French forces. Thus the guerrilla can be the student, the farmer, the laborer, the next door neighbor, or the butcher who can strike and fade away like the mist. Since the guerrilla is a soldier of the shadows, he depends upon secrecy and nonrecognition for his survival. It is this informality which makes the guerrilla difficult to fight.

For the professional soldier to fight the enemy he must know who and where the enemy is. His training and experience have taught him to follow the maxim, "Find them, Fix them, and Fight them." If the guerrilla cannot be found to "fix and fight," then the professional soldier becomes frustrated. It is the fear of the unknown and not being able to strike back which wears the professional soldier down.

Offensive Spirit

In guerrilla operations the spirit of the offensive is essential to prevent stagnation. Units that are active and successful in the accomplishment of assigned missions build up a high *esprit de corps* and attract followers; success is contagious. Mao Tse-tung recognized the principle that guerrillas cannot afford to fight any losing battles. Therefore, his problem for many years was to maintain an offensive spirit without a major engagement so as to be able to fight another day. Mao Tse-tung laid down three basic principles for Communist warfare in Asia which were:

1. Yield any town or terrain you cannot hold safely.

2. Limit yourself to guerrilla warfare as long as the enemy has superiority in numbers and weapons.

3. Organize regular units and pass over to the counteroffensive when you are sure of victory.

He recognized that it was only through offensive that he could achieve final victory and implement his political objectives. To do this it is necessary to be both patient and flexible while awaiting the opportune time and place to launch a counteroffensive. Mao Tse-tung certainly exercised this principle in the fight against Japanese forces in World War II and later against the Chinese Nationalist Army. This guerrilla warfare was fought for many years in China before Mao obtained sufficient power to gain control in 1948. In the final phase, when the guerrillas are sure of victory, they organize regular units and operate openly. There is no doubt that irregular warfare can be used to great advantage when it is combined with regular operations or as a prelude to open warfare. To achieve victory and ensure survival, guerrilla warfare must be offensive in nature because it is the only way that political objectives can be attained and opponents subjugated.

The element of surprise is another characteristic used most effectively in guerrilla operations. It is achieved through timing, direction, and method of attack, and is dependent upon receipt of good intelligence information often provided by trained observers, informants, and sympathetic civilians. Through the use of this information, appropriate objectives and plans are developed accordingly. Guerrillas generally attack at night using the cover of darkness or the concealment provided by forests or jungles to hide their movements to objectives. These targets could be an electric plant, radio station, telephone exchange, a key bridge, a person, or body of troops. If a band is operating in an area over a period of time, it frequently will change positions and routes of march to avoid detection. Surprise can be exploited further by hitting many widely separated objectives simultaneously so as to confuse the enemy about actual strength and to delay his commitment of counterforces.

In an ambush the guerrillas are very clever in selecting areas where the head of a column can be blocked along a defile and the main body saturated with automatic weapons fire. Often, guerrillas will combine a road or trail block with a swift vicious attack from the flanks to strike their objective, exploiting the element of surprise, then assemble promptly at a rallying point for return to their hiding places or "fadeaway" among the civilian population. These "hit-and-run" tactics often are accomplished behind the enemy's lines in areas where least expected—to reduce the effectiveness of the regular forces and exploit a psychological advantage—and are extremely effective.

If the assassination of an important political or military figure is the objective, then the methods and plans are varied accordingly. Guerrillas and partisans will use any methods or means to accomplish their mission and attack what they consider the weakest link in the chain of defense, whether by the use of murder, propaganda, or sabotage. The ends justify the means and their only law is that of survival.

Terrain

Another factor which is as important in guerrilla operations as it is in conventional warfare is terrain. To know the terrain and how to utilize it advantageously very often makes the difference between a highly successful or mediocre operation. One fact that stands out clearly is that guerrillas know how to use terrain efficiently and it makes very little difference to them whether it is the jungles of Vietnam, the mountains of Yugoslavia, or the Tundras of Russia. This proficiency is obtained through reconnaissance and training at night. The guerrilla studies the terrain until he is thoroughly familiar with every trail, road, creek, hill, swamp, or jungle. The terrain must be known thoroughly in every locality for at least 50 miles in all directions.

Native guides or local sympathizers who are familiar with the area are used very often to good advantage to assist in raids. The vastness of territories such as China and the USSR with their long lines of communication passing through underdeveloped sections assists guerrillas because it makes such communications vulnerable to attack and hinders the prompt reaction of counterforces. If the terrain is mountainous and rugged and covered with jungle forests or swamps, it provides concealment for logistical installations, bases or strong points, and tactical maneuvers. A lack of roads hampers counteractions by regular forces and reduces the effective use of heavy artillery and heavy equipment. In Greece during the period 1946-49 poor roads provided ideal conditions for Communist-led guerrilla operations against the existing government.

One aspect closely associated with terrain is the necessity for a base area. A base serves both a military function and a political purpose. Militarily it provides an area for training guerrillas, schools, communication facilities, supply points, hospitals, and headquarters. Also from the base, the political aims and high-level policy can be formulated into plans to accomplish military actions necessary to achieve the objective.

The skillful use of propaganda is another characteristic of guerrilla warfare frequently used by guerrilla leaders before and during a campaign. The purpose of propaganda is to maintain the loyalty of one's own forces; to enlist the sympathy of the local populace; and to weaken the enemy forces and the power of the government to control its people. Propaganda can be anything from a package of matches with a slogan to a sack of salt or a leaflet which will influence the opinion or attitude of any group to the guerrilla cause. Once guerrilla warfare has begun, it, in itself, is its best propaganda. If the propaganda is to be effective, it must

be directed consistently and vigorously against the enemy, employing those themes which will arouse doubt, suspicion, mistrust, or discontent.

In exploitation of successful armed attacks by guerrillas, propaganda accompanied by deliberate rumor spreading will do much to spread terror and panic among the people and weaken their faith in the existing government and its leaders. Propaganda is an adjunct to guerrilla warfare which must be recognized for its true value and countered. Propaganda, in itself, is no substitute for actual guerrilla operations, but if properly used, can assist in the successful attainment of objectives.

Command and Leadership

Command and leadership among guerrilla bands is more of the authoritative than the democratic type. In many instances their leaders have been trained by the Communist Party or possess other attributes which qualify them for command; sometimes guerrilla leaders are named by the political party to command the group. In World War II fanatical party members with military training were brought through the frontlines or parachuted behind the German lines, to provide energetic leadership for Soviet guerrillas. In Malaya the Malayan Communist Party provided the leadership for guerrilla warfare in that area in 1948.

The motivating factor behind guerrillas is their strong belief in their cause for which they have the willingness and courage to face great hardship and even death. A guerrilla realizes when he takes a vow to support the cause that he is expected to adhere to the guerrilla oath and law, the violation of which can result in death. The guerrilla leader expects absolute obedience from his subordinates in operations, since to become guerrillas they have had to express willingness to be judged and punished by their comrades in the event of insubordination or cowardice.

The best type of guerrilla leader is the one who is ruthless and remains unperturbed in any grave emergency and is capable through his dominating personality to weld the individuals of his band into an efficient fighting unit. He must engender such a sense of loyalty among his men through his personal leadership in the accomplishment of difficult missions and endurance of hardships that each guerrilla feels proud to belong to the band. The accepted fact by a guerrilla that he faces judgment by his comrades provides the motivation for the accomplishment of difficult tasks.

Organization and Equipment

Most military leaders agree that with the advent of nuclear weapons, the large concentration of forces known in World War II is no longer practical, and that to survive, future land forces should be small, self-contained, highly mobile, hard striking, and capable of rapid concentration and dispersion. Guerrilla units normally operate as small independent bands, and their very organization provides them with the desirable characteristics advanced by many military leaders in the nuclear age. The organization of a guerrilla band provides it with a certain amount of built-in protection; its relatively small size facilitates concealment and prohibits its normal consideration as a profitable nuclear target.

The basic guerrilla band is a simple and flexible organization consisting of about 50 to 60 men headed by a chief. Often, the band is organized initially by a political commissar who later designates a chief to be the leader. The chief assumes the rank of lieutenant, captain, or other grade dependent upon the importance of his position and the number of men he controls. The strength, organization, and grades of leaders are variable. There is no standard table of organization to use as a guide, although there are different types such as combat units (light and heavy), and in-

telligence, supply, and sabotage units which are organized to perform certain missions. The smallest unit organized is a "cell" normally consisting of four men.

The Soviets have always contended that in guerrilla actions it is more effective to have a thousand bands of 50 men each, rather than 50 bands of one thousand each. Guerrillas seldom wear uniforms, but rather prefer to wear the native garb of the area in which they are operating. This practice helps to conceal their identity, and assists in evasion or detection if they are forced to mingle with civilian populations to cover a withdrawal. Their equipment usually is light and only sufficient to accomplish a particular mission. Individual weapons which are carried are knives, rifles, submachineguns, automatic rifles, or grenades.

In general, arms which are light and possess maximum firepower, and which can be brought into action quickly are preferred because they are not burdensome and assist the mobility of the units in tactical operations.

The mobility of the unit is sometimes further increased when guerrillas are mounted on vehicles or horses. With the development of improved communications and aircraft, it is now possible for guerrillas to increase the range of their operations. It has been estimated that it is possible for one unit to operate over an area 100 miles long and 80 miles wide. The development of light aircraft and helicopters will further increase their zone of operation and attack capabilities. Where possible, guerrillas do not like to be burdened with administrative sections and depend upon obtaining food from friendly civilian personnel. If the operation is an extended one or is one in which a unit is isolated or one being conducted in the rear of enemy lines, it is possible to be supplied by air. The airplane has enhanced the mobility and tactical capabilities of guerrilla raiders.

Tactics

The employment of guerrilla units is designed to accomplish certain tactical and strategical objectives. Therefore, the guerrilla leader must select his targets wisely to ensure that each mission contributes to the accomplishment of the over-all objective. For example, Stalin felt that "the proper guerrilla field is the enemy's rear." By such employment, Soviet guerrillas in World War II were able to harass German communications, force deployment of troops for rear area security, and act as an intelligence agency. When the civilian population is friendly and supports a guerrilla movement, they are an invaluable source of information. Guerrilla agents can be planted in key spots to obtain information which will make it possible for the formulation and execution of plans that will weaken and wear down the opposition. The value of intelligence obtained by guerrillas is illustrated by a quote from a German corps report of 5 March 1942: "A guerrilla movement pays back a hundred times the costs which go into its making and maintenance of its intelligence work."

The conduct of raids, ambushes, and attacks must be based upon accurate information to ensure success. The targets selected can be enemy troops, a bridge, telephone exchange, warehouse, a billet, or an ammunition dump. Whatever the target selected, it should be one within the guerrilla capability to assure, to a reasonable degree, successful accomplishment of the assigned mission.

Guerrilla raids normally are conducted at night and are characterized by their boldness, stealth, and the rapidity with which they are made. The cover of darkness provides concealment and is an effective ally to the guerrilla. He can strike in one area at sunset and by sunrise be miles away. His plans are based upon hitting quickly with minimum forces so that he can place as much distance as

possible between his forces and the enemy.

The guerrilla uses his initiative and cunningness to the maximum advantage. The Communist guerrilla also uses terroristic methods and subterfuge as psychological weapons. One of his favorite tricks is to plant a time bomb in a locality such as an officer's billet, a club, or a theater where officers customarily gather at a certain time. Eleven officers were injured in such an operation in Vietnam in October 1958. Often this type of ruse is timed to discredit a government when an important international conference is taking place so as to make the sponsoring government appear weak and unstable in the eyes of visiting dignitaries.

Other malicious acts which are committed to worry the opposition include putting sugar in gasoline of vehicles or mixing explosive charges with the coal of a locomotive. The guerrilla is secretive and ruthless in his actions and moves like a tiger in the night with the cunning of a fox to make his attacks. A guerrilla, with his hit-and-run tactics, terror, and assassination techniques does not pretend to have or follow the traditions of the military profession.

The guerrillas cannot afford to fight any losing battles or lose the initiative, but, sometimes, in the sequence of events, guerrillas are forced to defend a stronghold to prevent seizure or penetration of an important area. The defense generally is assumed to gain time or while moving to a new base of operations. It is most unusual for guerrilla units to defend because by so doing, the elements of mobility and surprise are lost. If the defense is assumed, it is done for a limited time only. The terrain is skillfully used in the area to be defended. Since guerrillas do not normally have tanks and artillery to engage in sustained operations against regular forces, one of their principles is to withdraw and avoid combat until such time as they can obtain sufficient power to mount an offensive and achieve success. By doing this they are able to live and fight another day while regular forces gradually are worn down and their manpower depleted.

Conclusion

Only a map study of the Western Hemisphere is necessary for one to realize that these countries possess ideal conditions and characteristics for the conduct of guerrilla warfare. The terrain, with its vastness of territories and long line of communications, the instability of some governments, and political conditions are but a few of the ideal characteristics which are found in the countries of the Western Hemisphere, and which make guerrilla warfare feasible in this area.

To be able to counter guerrilla warfare, one of the primary considerations is to recognize the danger of such warfare when used by Communists as a means to obtain their political objectives. The Communists are experts in applying the techniques and methods of guerrilla warfare as evidenced by their successes in the past.

Frequently, the Communists will align themselves with minority groups or ultranationalistic movements for the purpose of creating crises, and at the first opportunity, seize the powers of government. Guerrilla warfare is an inexpensive way to obtain objectives without resorting to a perhaps unacceptable conventional or nuclear war. For this reason it will continue to assume more importance in the future.

Therefore, to meet the problem of Communist guerrilla warfare, the first step is to acknowledge the serious threat that it poses to the security of the Western Hemisphere. Many of the guerrilla revolutions in this area have been prompted by groups of "outs" wanting "in" and have had neither popular support nor Communist direction. But, Communist inspired or exploited guerrilla operations can happen in the American Continent. The conditions which have permitted such action in other parts of the world exist also to a degree in

the Americas. Stable government is characterized by high levels of education and economic stability. When public opinion is oriented to the strong support and belief in its government, then the chances for Communist guerrilla warfare are remote. A step in the right direction might be to give a higher priority to a Western Hemisphere program which would assist those countries that need economic or military help so that the reasons and causes for guerrillas do not exist.

Since the responsibility for the security of a nation generally rests with its military forces, renewed efforts should be made by them to plan and train for counterguerrilla actions, because there is no doubt that in the future the armed forces will continue to be a high-priority target of communism. Our combat arms generally are organized and equipped to fight any enemy on any type of terrain. However, to be more completely ready, units must be trained and appropriate plans developed based upon an understanding of how the guerrillas are organized, what their tactics and methods of operation are, how they can be defeated.

The answer lies in training which will teach our soldier to be better than the guerrillas in all phases, so that he is disciplined, is in superior physical condition, and is an expert in his weapons as well as in those of his enemy. He must be able to live and operate in the jungle, desert, and mountains. Combat training must include antiguerrilla operations because in the future many units of the armies in the Western Hemisphere may be fighting guerrillas. With this type of training program, soldiers with modern weapons and strong leadership can defeat the guerrilla at his own game and ensure that Communists do not gain their ends of driving a wedge in the solidarity of Western Hemispheric nations.

To take full advantage of improved firepower, Army forces must be able to deploy and maneuver rapidly so as to bring to bear whatever force is needed at the critical point at the proper time. Thus mobility is the next measure of how modern our Army may be. It has two principal forms. First is the strategic mobility necessary to deploy Army forces worldwide, provided by air and sea lift of our sister services. The other is the tactical mobility available from organic Army means which makes it possible to maneuver both our forces and firepower in battle. . . .

The necessary combat dispersion of Army units dictates that they be able to concentrate in time and space more rapidly than the enemy, destroy his forces, and disperse again as necessary. Units must do this so quickly as to preclude the enemy from reacting effectively. What is desired is the application of a greatly stepped-up tempo to the precept of 'getting there fustest with the mostest.' In view of the numerically greater enemy that might confront us, it is mandatory that Army units have superior tactical mobility in addition to modern firepower so as to maintain qualitative superiority on the battlefield.

General G. H. Decker

RUSSIAN MILITARY REFORM: 1862-1874

Peter von Wahlde

ALTHOUGH "there can be no danger in expressing the conviction," wrote Captain George B. McClellan, United States Army, in January 1857, "that the siege of Sevastopol called for the most magnificent defense of fortifications that has ever yet occurred," the final military catastrophe suffered by Imperial Russia at the hands of Britain and France in 1853-55 promised that the reign of the new Czar, Alexander II, would not be easy. National military humiliation fostered a broad skepticism toward the ingrown political, economic, and military order so admirably forwarded by Nicholas I during the preceding quarter century. Many conservative-minded Russians joined with westernizers, liberals, and Slavophiles in the conviction that the system was outdated, and that fundamental reform no longer could be delayed.

Reforms

Four years of intense social struggle elapsed before the most vital reform, the liberation of the serfs, could be proclaimed by the Manifesto of February 1861. Breaking the crust of tradition and custom, the emancipation provided an entering wedge for further important reforms of political, judicial, social, and economic institutions. Not the least of the reform efforts of the sixties were those touching the military establishment. In accordance with the civil legal reform measures of 1864, the military courts system was modified, while corporal punishment and banishment to military colonies were abolished.

To achieve greater decentralization, efficiency, and economy, the entire central military administrative structure was drastically reoriented and reduced, and a system of nationwide military districts founded. Undertaken also was expansion and improvement of military educational institutions, the rearmament of the army, and the modernization and augmentation of military industry. The reform effort was climaxed by the introduction of universal military liability in 1874.

The necessity of military reform was acknowledged by Alexander II as early as 1856. The actual impulse came, however, only in 1859 when the Military Minister, Ceneral N. O. Sukhozanet, revealed the true state of the army by declaring that the transfer of four army corps to the Austrian frontier, ordered by the czar on the plea of Napoleon III, would require five months. Two years were to ensue before the appointment of General Count Dmitry Alexseyevich Milyutin as Military Minister in November 1861 signaled the genuine inauguration of the most fundamental military reorganization in modern Russian history. In an amazingly brief timespan—10 weeks—a general reform and reorganization program was prepared by the Ministry, submitted to Alexander II by Milyutin in his celebrated "report" of 15 January 1862, and confirmed by the czar before the end of the same month.

Milyutin's appointment advertised the victory of the reform party in a struggle that had raged among military men since

The military reform beginning in 1861 marked the inauguration of the most fundamental military reorganization in Russian history, and included rearmament of the army and modernization of military industry

at least 1836. "For a period of ten years since the suppression of the Decembrist revolt (1825)," writes one Soviet military historian, "not one serious military theoretical work was published. The reaction under Nicholas I made impossible a free exchange of thought in the press in general, and in the military press in particular." Thus it was only in 1835 that General Major I. F. Veimarn II published his book entitled, *Guide for Instruction of Tactics.* Composed of a series of lectures representing official Nicholaevan military views, the ruling spirit of the book was the maxim that "in all military movements and evolutions it is necessary that soldiers maintain alignment, for which they must without fail adhere to a uniform pace and keep in step."

Changes in Strategic Doctrine

The following year saw the first trace of a divergent trend among military thinkers. General N. V. Medem's influential work on strategy, *Survey of Best Known Laws and Systems of Strategy,* presented a detailed critique of the "absolute systems" of such western theoreticians as Lloyd, Bülow, Jomini, Clausewitz, Decker, and Wagner, concluding that "constant and categorical laws for [military] operations cannot exist."

The study of another officer, Lieutenant Colonel P. A. Yazykov, examined the relationship between military geography and strategy. Yazykov objected to the largely descriptive character of contemporary works in this field, their lack of interest in generalization and theoretical conclusions, as well as the fact that "none had as a purpose to represent military geography as a science which forms a separate branch of strategy."

Attempting to "define the strategic properties of geographical features," Yazykov maintained that "alterations in the external appearance of geographical configurations and their properties relative to the movement of armed forces," result in "changes in the strategic importance not only of separate geographical features, but of whole countries."

Continuing Yazykov's work, Count Milyutin accomplished during the forties the theoretical and historical work which placed him in the forefront of the military reform movement. By the forties, declared Milyutin, "never was it so obviously necessary for successful conduct of war that fundamental knowledge of the theater of military operations—its natural properties, statistical resources and . . . all material and moral capabilities of the both contending parties—be available." Carrying this theory into practice, in 1847-48 Milyutin published *Pervii opyty voennoi statistiki* (*First Experiments in Military Statistics*), which, including a section on methodology, concentrated on a "military-statistical" survey of Prussia and the German Confederation.

In 1854 Milyutin was promoted to general major, and in 1855 accorded membership in the Imperial Suite. The next year he became a member of the "Commission for the Improvement of Military Affairs," created as a result of the Crimean War. In a monograph originating from this work, Milyutin advanced the concept of a mass army, stressing the vital necessity of land forces sufficiently elastic to meet the demands of war *and* peace. Since mili-

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tary service meant release from serf status, "serfdom allows us neither to shorten the term of service nor to increase the number of unlimited furloughs [necessary] for a diminuation of the number of military personnel" in peacetime. (Service was 20 years in the military colonies, 22 years in the Guards and Grenadiers, and 25 years for regulars. The Recruiting Regulations of 1831 made service obligatory for serfs, *meshchan*, and sons of soldiers. The annual contingent for 1835-54 was about 80,000. The system of indefinite leaves, begun in the thirties chiefly for financial reasons, released many soldiers into the ready reserve often after 10 or less years of service.) Thus was precluded the creation of a mass army. Here, apparently for the first time in an official paper, was advanced a powerful military argument for serf emancipation, foreshadowing also the universal military liability law of 1874.

New Tactical Doctrine

An outstanding military thinker was the engineer and fortifications specialist A. Z. Telyakovsky who, asserting that field and permanent fortifications cannot be classified separately according to simplicity of construction, claimed a very close bond between theory of fortifications and tactical and strategic considerations. Telyakovsky maintained "the impossibility of deducing immutable laws of fortification," and emphasized the necessity of constructing works "in conformity with the locality and generally used methods of attack and defense."

A first principle of this approach was to substitute for the hitherto unbroken, continuous lines in field and permanent fortifications, a system of separate, relatively independent yet mutually supporting strong points concentrated in the most important sectors. A second fundamental was the concept of deeply echeloned defense fronts composed of several lines of defense, for only this type of defense could withstand the weight of the rapidly developing modern mass and machine armies. One measure of the impact of Telyakovsky's ideas is seen in the words of General E. I. Todleben, famous as the defender of Sevastopol, who wrote Telyakovsky that "I created nothing new; I only carried your ideas, Arkady Zakharyevich, into life."

Another of the pre-Crimean War military reformers was Colonel F. I. Goremykin, whose ground-breaking work entitled *Guide to the Study of Tactics, Their Elementary Foundations and Practical Application* also was predicated on the conviction that it is "impossible and useless . . . to propound constant, definitive and immutable laws. . . ." Goremykin's central concern was the theoretical elaboration of a principle of interaction among units of combat formations scattered by hostile action. Confronting the tendency of modern war to dissolve into "separate battles in which various units are found in varying situations," Goremykin insisted that battle must "be subordinated to the primary consideration of how to preserve the unity of operations as between different units and different branches of service in conformity with general goals."

Success under modern conditions "depends upon precise and thorough dispositions" which enable "each unit commander to act as his own situation, the general plan, and the situation of other units require." The complexity of modern battle and the sharply enhanced effectiveness of rifle and artillery fire led Goremykin to advocate a deeper tactical echelonment, and to emphasize the role and importance of reserves, while pointing out that new weapons development was making the older infantry organizational forms obsolete. Perhaps the most outspoken opponent of the military system of Nicholas I, and hence of the Suvorov-Kutuzov tradition, Goremykin asserted that it was "necessary to view the individual soldier not as a mechanical weapon or as figures

to be disposed of according to plan, but as a living, functioning force having variegated characteristics."

The substance of the criticisms of Medem, Yazykov, Milyutin, Telyakovsky, and Goremykin, lacking nothing in perception and originality, was a demand, erected on a scientific basis, for modernization of Russia's military posture along lines thought by Russian experts to be most suitable to Russian conditions and requirements. A national military catastrophe was required before Russia's best military minds could find a political climate in which they could hope to prosper. Even then the problem of solving the contradiction between protection of state interests abroad, that is, war in its new, modern guise, and the preservation of an internal order based on absolutism and class privilege prevented full fruition of the ideas of these early military reformers.

Military Organization Before 1862

One of the chief tasks undertaken by Count Milyutin was reorganization of the central military administration and the creation of a system of military districts.

The general thought behind this reorganization was to bring the whole edifice into a state of good order and simplify its complex mechanism, and for this it was . . . useful to fuse sections similar in their functions, and to destroy superfluous growths which in the course of time have formed . . . more or less casually, without any plan.

The Military Ministry prior to 1862 consisted of the Office of the Military Minister and nine departments. The first included:

1. Office of the Military Minister proper.
2. Military Council on Legislation and Administration.
3. Committee of General Judge Advocates.
4. Committee on Military Censorship.
5. Military Scientific Committee.
6. Medical Committee.

Each of the nine departments was headed by a director, a vice director, and an administrative committee. The Inspectorate dealt with personnel, staffing, and internal organizational matters. Jurisdiction, however, did not extend to the Artillery, Engineers, Guards, or Grenadiers who were not subordinate to the Military Ministry. The Inspectorate also administered the draft and recruiting service, the central military printing establishment, and the corps of mounted orderlies and couriers.

The General Staff, ranking also as a department, was occupied with questions of troop placement, distribution, tactical and strategic organization, statistical study of the provinces, and administration of the Imperial Military Academy. The General Staff comprised two divisions: the General Staff proper, and the Topographic Corps. The former composed the Grand General Staff and the Troop General Staff. Numbering about nine general officers, the Grand General Staff was separated into three sections:

1. General Staff Personnel, headed by the Chief of the General Staff.
2. Plans, Operations, and Foreign Armies.
3. Scientific and Historical.

The Troop General Staff furnished staff officers to the army. To each army corps usually was assigned one general officer as Corps Chief of Staff, two field and several company grade officers, and two officers to each division. The Topographical Corps, comprising a general officer and about 450 officers and men, was made up of the Topographical Depot, Topographical officers and companies attached to corps and divisional staffs. Astronomical, engraving, printing, mechanical, and archive sections also were maintained. The Imperial Military Academy was created, and the General Staff was accorded departmental status in 1833.

The "Proviantstvo," or quartermaster,

was active only in supply of foodstuffs to garrison and administrative troops. The "Active Field Army" of three to four corps, stationed in Poland and the western provinces, was supplied by its own "General-Proviantmeister." The "Commissariat" functioned as troop paymaster and financial agent for the entire military establishment. It also provided the entire army, including the "Active Field Army," with equipment, horses, clothing, ammunition, and supplied and administered the military hospital system.

The Artillery and Engineer departments were charged with provision of ordnance, armaments, and construction equipment for all branches and units of the army. The Artillery was commanded by the General-Feldzechmeister who, together with the General Inspector of Engineer Troops, possessed the right of immediate access to the Emperor, thus bypassing the Military Minister. These two officers usually were members of the Imperial Family. The remaining departments were those of Military Colonies, Medicine, and Judge Advocate. Military educational institutions were headed by an officer to whom was accorded ministerial rights. The Military Minister, however, exercised command of the various separate Infantry, Cavalry, and independent corps with the exception of the Active Field Army and its Reserve components, the Guards Infantry, Guards Cavalry, and Guards Grenadier corps.

Military Ministry Reorganized

Reorganizational work within the Ministry continued until 1866. In 1867 a new table of organization for the Military Ministry was issued, and on 1 January 1869, a further *Statute on the Military Ministry*, enduring into the 20th century, finalized the recent reforms. The consolidation process unified the General Staff, Inspectorate, and sections of the Main Staff of Military Educational Institutions into a combined "Main Staff," encompassing all questions of personnel, organization, disposition, training, and education throughout the land forces. The Main Imperial Staff, the personal staff of the Emperor, comprising the Military Minister, various General Inspectors, the Chief of the General Staff, and others, was dissolved in 1865, a major organizational move designed to centralize executive and advisory functions in the hands of the Military Minister. This official now became the chief military advisor to the czar, while acquiring vast new authority within the defense establishment.

The "Commissariat" and the "Proviantstvo" were formed in 1864 into a Main Quartermaster Administration. The *Statute of 1867* combined the Artillery Department, the Staff of the General-Feldzechmeister, and the Artillery Section of the Staff of Military Educational Institutions into a Main Artillery Administration which controlled the entire artillery establishment, including arms factories and arsenals. Formed also was a Main Engineer Administration which assumed the parallel functions of the General-Feldzechmeister and the General Inspector of Engineer Troops. The Staff of the Chief of Military Educational Institutions was transformed into a Main Administration subordinate to the Military Minister.

These changes impressed upon the central military administration the following profile: the six major divisions included the Military Council, the High Military Court, the Chancellory, the General Inspectorate of Cavalry, and of Infantry, and the eight main administrations, all of which were directly subordinate to the Minister. The latter included the Main Staff, Quartermaster, Artillery, Engineers, Medicine, Educational Institutions, Military Juridicial, and Cossack Armies. One concrete consequence of this reorganizational effort was to reduce the personnel of the Military Ministry by about 1,000 persons, and to reduce administrative work by 45 percent.

Military Districts Organized

The year 1862 saw the organization of the first military districts, a system which endures to the present. Heretofore, local military organs consisted of a loose network of district (*uyezd*) commanders. Usually prominent local nobles, these officers served the provincial governor chiefly as draft officials. Only a few central departments—Engineers, Commissariat, Proviantstvo, Artillery—maintained scattered local representatives. Such officials did not supply units stationed in their districts, but functioned as procurement and production officers for their St. Petersburg departments. Since most local questions had to be forwarded to St. Petersburg, extreme centralization characterized the national administration of the pre-reform Russian Army.

To remedy this awkward situation, the "grand active army of operations" was liquidated in 1862, and replaced by the Warsaw, Vilna, and Kiev military districts. By the *Statute of 6 August 1864* was created a nationwide military district network. Russia was divided into 15 districts, each district operating as an organ of local troop administration and as a direct representative of the Military Ministry. The districts became, in effect, military ministries on a local scale. The branches of service in each district formed the staff of the district commander, but were, at the same time, subordinate to their main administrations at the Military Ministry.

Several advantages derived from the new system. The Military Ministry now acquired general rather than detailed supervisory functions. Inherent in the new system was the promise of more flexible operational control of troops. In addition, a more rapid, simplified, and inclusive mobilization timetable now could be calculated. In case of war the districts could be converted easily into an army staff, an especially important factor in the frontier districts. The corps as a peacetime tactical unit was abolished, divisions becoming the highest units since the districts contained all corps elements.

New Rifles Developed

The rearmament of the Russian Army saw constant progress in the decades after the Crimean War. Immediately after the close of the war in 1857, the .70-caliber infantry shoulder weapon, in smoothbore and rifled models, was replaced by a .60-inch rifled muzzle-loader manufactured in Germany and Belgium. In 1862, by the beginning of the reforms, 260,106 men had been issued this *vintovka*, a term officially adopted in 1861 to designate a military shoulder weapon. In 1866-67 a breech-loading *vintovka* of .60-inch bore, using a paper-fulminate cartridge exploded by a forward-moving needle-bolt, was adopted.

In 1864, before the Austro-Prussian War of 1866 had effectively demonstrated to Europe the need for breech-loading, repeating military shoulder arms, a Russian military mission under Colonel A. P. Gorlov, later General Lieutenant and Inspector of Local Arsenals, had been dispatched to the United States, where, in cooperation with Colonel Hiram Berdan, Civil War sharpshooter and military inventor, was developed a breech-loading, repeating rifle of a .42-inch bore. Another Russian officer in the United States, Staff Captain Bunikovsky, wrote:

In America the best rifle and cartridge is considered . . . by the best factories—'koltovsky' (Colt), which prepared our infantry repeating rifle, and 'bridzhportsky' (Bridgeport), which prepared our small-caliber cartridges, to be the Russian. Technicians of these factories modestly confess that the precision of their work they owe to Russian officers.

Further modifications resulted in the so-called "Berdan No. 2," manufactured in Russia in Infantry, Dragoon, and Cossack models. Although officially adopted during

the early seventies, less than one-third of the army was equipped with this rifle. Only in 1879, as a lesson of the Russo-Turkish War, was the entire army supplied with this model which continued in use into the nineties.

Great significance was accorded the reorganization and strengthening of the Russian military-industrial base in order that Russia might become independent of foreign arms design, development, and manufacture. This program, however, was surrounded with immense difficulties. The chief problems involved the rapidity of European arms development during the period, the backwardness of native industry and technology, lack of sufficient funding, and the character of Russian labor assigned to the arms factories.

Low labor productivity, high incidence of handwork, bad laboring conditions, the necessity of supporting large numbers of dependents of serf laborers, and the use of soldiers as laborers were among factors contributing to high costs both before and after emancipation. Thus, for example, when serf labor was being abolished during the middle sixties, the actual unit cost at the Izhevsk small arms factory was nine rubles. But when the maintenance costs of workers and their dependents were considered, the cost per rifle rose to over 19 rubles.

Small arms and accouterments were manufactured by the three main factories of the Military Ministry at Tula, Izhevsk, and Sestroretz. The annual production of these factories during the fifties was rated at 105,000 to 135,000 rifles and pistols, and 25,000 to 30,000 bayonets and sabers. However, from 1853 to 1861 the average yearly output of the three factories was only 89,000 small arms. Because of primitive machinery and much hand labor, defective rifle barrels at the Izhevsk plant reached 60 percent at times, while 13 percent of the finished units failed on the test stands. Powder was produced at factories in Kazan, Okhtensk, and Shostensk at the annual rate of about 55,000 poods, the latter two plants also producing about 80 million "capsules" (priming charges) each year. (One pood equals 36.113 pounds.)

Artillery was cast, and gun carriages and caissons of metal rather than timber were produced at the government arsenals in St. Petersburg, Bryansk, and Kiev. In 1851-52 the arsenals assembled 137 new artillery pieces and reconditioned 420, together with 1,762 new and 1,402 reconditioned caissons. During the war years 1853-56, 588 new guns were cast, and 651 reconditioned. Considerable progress in improvement of artillery arsenals was quickly achieved, for the average production figures of 1862-65 (209 guns, 84 gun carriages, and 137 caissons) were substantially surpassed in the years 1867-70, when the figures reached 622, 317, and 349 respectively. Limited quantities of guns and shot were produced also in other government mining and casting factories, chiefly in the Urals.

Arms Production Problems

One major problem confronting the state arms industry after 1861 was that of reorganizing and increasing production on the basis of free labor. A typical attempt to get the government out of actual plant operation and to replace obligatory with market labor was to lease the Tula factory to a certain General Standersheld who, remaining on active service with pay and benefits, received from the Main Artillery Administration generous operating subsidies and a guaranteed profit. The Izhevsk and Sestroretz arsenals were similarly leased to combinations of military men and merchants. The Tula plant remained in "private" hands until 1870, when the government launched an investment program involving 2.9 million rubles. An extension of this funding program brought added investment, and return to government operation, to the Izhevsk and Sestroretz arsenals, and to the Okhtensk powder plant.

From 1868 the latter factory was staffed entirely by civil labor, while the powder factories at Kazan and Shostensk used military labor into the seventies. Powder production during the sixties remained stable at 60,000 to 100,000 poods yearly. Only during the seventies was the transition to free labor completed and output raised significantly: in 1871 the three factories produced 121,119; in 1872 they produced 165,000; in 1873 there were 170,000; and in 1874 a total of 180,000 poods. In 1869 an ammunition factory was opened in St. Petersburg with a planned capacity of 150 million cartridges yearly. In 1870, there were 90 million cases made at this factory, while 117 million cases were loaded.

A major shortcoming of the Russian military posture was the lack of a modern iron, steel, casting, and forging industry. Although the first successful Russian gun using a steel admixture is believed to have been cast in 1812 at Yugovsk, in the Urals, the Russian military remained uncomfortably dependent on Krupp steel and on native brazen guns. Apparently as a result of the work of the metallurgist P. P. Anosov, and the engineer P. M. Obukhov, during the forties and fifties, the requisite metals and production techniques were created which justified building in 1859 the Prince Michael Artillery Works in Zlatoust, near Ufa in the south Urals. An immediate success, this factory produced its first artillery pieces in 1860, launching Russia into the age of artillery steels.

In 1863 construction was begun on two new artillery works: one contract was awarded to the specially formed Obukhov-Putilov-Kudryavzev combine for a factory in St. Petersburg, while the government started the Motovilikhinsk Works near Perm where six- and eight-inch steel breech-loading guns finally were produced at the end of the decade.

In 1863 the Russian Government accepted delivery of 100 steel four-pounder artillery pieces from the Krupp Works to form the core of the reequipment of the field artillery, which began in 1866. Inasmuch as it was impossible to produce in Russia the 1,200 steel guns necessary for this program, and because financial difficulties prevented purchases abroad, native bronze castings had to be used. This production was carried out in the years 1867-69, and by 1870 all infantry and horse artillery batteries were equipped with either bronze or steel guns, and by 1871 the artillery reserve numbered approximately 448 pieces.

Prior to the beginning of reforms in the artillery establishment and the arms industry, the infantry and horse artillery of the Russian Army comprised 138 batteries with 1,104 guns. But, partially because each artillery brigade had been strengthened by adding two batteries of 8 nine-pounders in 1873-74, a lesson of the Franco-Prussian War, the artillery establishment in 1874 numbered 300 batteries and 2,400 guns, with 851 pieces in reserve. Despite this very important progress, Russian artillery development fell behind that of Western Europe because of the inability, financial and technical, to produce metals capable of withstanding the velocities (1,650 feet per second) then being achieved by more advanced states.

Compulsory Military Service

The military reorganization of the sixties improved the Russian military position in all but one quite important aspect. The overriding need for an army which could be contracted in peacetime and speedily expanded with trained men in wartime was abundantly clear, and had been forcefully argued by Milyutin in his monograph of 1856 and in his "report" of 1862. Universal military liability, however, would require substantially greater defense spending, and would necessitate such a fundamental change in the social, political, and numerical composition of the army

that it was politically unthinkable throughout the sixties.

However, the Military Ministry in 1862 undertook the first preparatory steps. In order to speed mobilization, and to avoid creation of new tactical units upon the outbreak of war, the number of divisions was raised from 31 to 47, and maintained at half strength, each division retaining a permanent cadre amounting to 35 percent of strength. In order to create a trained reserve of 750,000 men quickly, an annual draft of approximately 125,000 men was begun. After seven or eight years of active service, these men were released into the reserve through the mechanism of the old "indefinite leave" system. Thus by 1870 a trained reserve of about 553,000 men was brought into being, more than doubling the 210,000 level existing in 1862.

It is a truism in the history of Imperial Russia that impulses working toward major internal reforms originate in Western Europe. It is not at all surprising, then, to find Count Milyutin writing that:

The Franco-Prussian War made a strong impression in all of Europe. . . . It was then that we realized how inopportune was our exclusive interest in economy, disregarding the development . . . of our military forces. Concern with [military] reductions and [defense] savings drew into the background while talk began as to whether our armed forces were sufficient to guard Russian security. . . .

Taking advantage of this turn in public opinion, the Military Ministry reopened the question of strengthening the army, reducing the term of service, and making a larger sector of the population subject to military service. The major struggle over this question took place in the debates in the State Council throughout the greater part of 1873. Here, Milyutin, who favored exemption from military service on the basis of education, hoping to "safeguard the interests of national education, and to preserve for the various administrative services and social organizations the necessary number of trained men," and to attract into the army educated men who would become officers, was strongly opposed by prominent representatives of Russian conservatism. Among these men were Counts Baryatynsky, Tolstoy, and Shuvalov, who feared democratization of the army, loss of privileges accorded to nobles serving with the army, and reinstitution of obligatory military service for the nobility abolished in 1762 in the reign of Peter III.

The conservative elements were powerfully supported by the articles of Generals R. A. Fadeyev and M. G. Chernyaiev in such publications as *Vest', Russkii vestnik, Russkii mir,* and by the influential M. N. Katkov's editorializing in the *Moskovskie vedomosti,* as well as by Prince Gorchakov, the Foreign Minister. The State Council session of 3 December 1873, impelled by the Franco-Prussian War, nevertheless adopted Milyutin's program, and on 1 January 1874 the statute was promulgated.

The operative mandate of the *Statute of 1874* required of all males, without regard to class or birth, military service from the age of 21. Exemptions from the six-year service term were based on domestic condition, physical standards, and education. Unconditionally exempt were only sons and sons or grandsons who were the only workers in their families. These numbered about 24 percent of this category. Sons who were second workers in their families were subject to field service in wartime only. Such exemptions amounted to about 20 percent. Conditionally exempt also were sons next in age to brothers serving in the army, and sons whose elder brothers had died while on active service, amounting to five percent of the annual selectees. Thus approximately 48 percent were excused from military service in peacetime, and 24 percent in wartime.

Exemptions by reason of physical unfitness numbered about six percent as totally unfit, and 11 percent fit only for reserve service. Because of the high rate of exemptions, physical standards in the Russian Army had to be lowered considerably. Exemptions on grounds of educational status comprised deferments, limited service terms, and exemptions. The shortest deferments entitled high school students to postpone service until the age of 22; the longest enabled university students to defer service until the age of 27.

Service for graduates of higher institutions was fixed at six months; graduates of gymnasiums served 18 months; city school graduates were to be enlisted for three years; and those enjoying a primary education were obligated for four years. Outright exemptions were granted physicians, veterinarians, druggists, students at the Academy of Arts, and government employed and certain private teachers, amounting to about .2 percent of those annually subject to service.

Significance of Reforms

What was the significance of the military reforms of the sixties? An appraisal falls conveniently into short- and long-term categories. First and foremost, Russia's military position and power was enhanced greatly during the late sixties, through the seventies, and into the eighties. The reforms were directly responsible for the fine showing of the field army and military administration in the Russo-Turkish War of 1877-78. Despite incompetent leadership in the highest positions, the undeveloped state of the rearmament program, and of the universal military service mechanism, the first mobilization in Russian history was strikingly successful, while Russian forces eventually penetrated as far as the outskirts of Constantinople.

Over the longer term, nevertheless, the reforms seem to have had a more or less marginal impact. Taken in their entirety, they might well be seen as a grudging attempt to modernize one sector of the state structure without disturbing the precious balance upon which the autocratic order rested. Much of the work of the sixties suffered severely under the renewed reaction of the late seventies and throughout the reign of the new Czar, Alexander III. It was in 1881, for example, that such a remarkable statesman as Count Milyutin was forced into retirement, depriving Russia of the service of perhaps the most capable state servant of the latter half of the century. Political reaction meant that after two decades of enhanced national military capability, the military power of the nation, in common with its agricultural wealth, entered a period of stagnation lasting until 1914.

The long-range effect of the 1874 military service statute, in particular, was unfortunate. Based on peacetime rather than wartime needs, this law exempted over half of those liable for service, and made the army physically older and weaker. By means of educational exemptions, class privileges were largely preserved. Russia approached the World War not as a "nation in arms," but with an army lacking a large trained reserve.

The reforms of the sixties were but beginnings, the full benefit of which could be completely realized only by continued development, and by a parallel growth of the entire economic and social order. The Czarist Government permitted the immense labors of the sixties to founder in a sea of neglect. They were revived and given powerful new impulse only by a Soviet Government profoundly interested in preserving its own tenure, and in extending the national power.

MILITARY NOTES AROUND THE WORLD

UNITED STATES

Pressing The Search For 'Whiskers'

Metal "whiskers," a headache for handlers of electronic equipment, may some day be a boon to makers of missile structures in which high tensile strength is vital.

Some of these tiny metal fibers, which grow out of bits of metal under heavy electron bombardment, have a strength up to six times that of the strongest modern steel. The problem before researchers is to form the whiskers—which have diameters of less than a 10,000th of an inch—into a material that can be fabricated.

Metal whiskers were discovered a short time after World War II when engineers sought the cause of mysterious short circuits that developed in electronic equipment after long use. Investigations disclosed tiny wiry strands jutting from areas of metal surfaces which had been under heavy electron flux. These strands are formed when atoms boil out of the metal and deposit themselves in a regular crystal structure, sometimes in the form of a spiral.

The tensile strength of a perfect crystal theoretically should be on the order of several million pounds per square inch. The difference between this figure and the much lower measured strengths of ordinary crystals has bothered physicists for many years. The discovery of whiskers' high strength confirmed the theory that the weakness of ordinary metal is due to imperfections in the crystal structure.

Officials of the National Aeronautics and Space Administration which is sponsoring metal-whisker research estimate that it may be possible to make usable materials from metal whiskers in five to 10 years.

One of the major difficulties is that only one metal whisker in 10 has unusually great tensile strength. So far, no one has devised a simple test of whiskers' strength other than to pull each one individually.

Joining the whiskers is another problem. Bonding material must be ductile and able to carry a shear load. Current experiments involve the use of copper as a bonding material.

While some scientists are trying to grow longer and thicker whiskers, others are trying to prevent or reduce them to eliminate short circuits in electronic equipment. Several investigators report that alloys form fewer whiskers than pure metals. Nickel and tin are common ingredients of such alloys.—Jay Holmes, *Missiles and Rockets.*

Third Generation 'Nike'

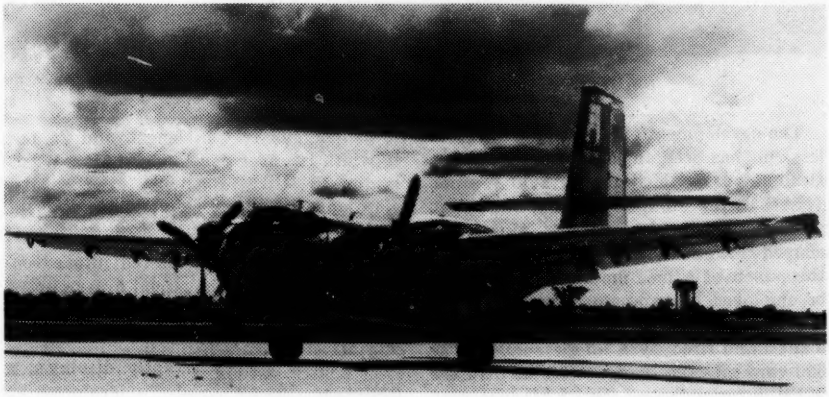
The *Zeus* antimissile missile, third generation of *Nike* air defense missiles, has successfully passed initial firing tests. Both the booster motor and the sustainer motor of the giant missile were reported to have performed satisfactorily in tests designed to obtain information on flight and propulsion characteristics of the weapon. In a previous test last August, a *Nike Zeus* test missile was launched successfully, but broke up in midair due to a technical failure. The solid propellant rocket motor which constitutes the first stage of the missile develops over 400,000 pounds of thrust at launch. It is the largest known single-engine solid propellant rocket motor ever fired.—News item.

One-Man Helicopters

The United States Marine Corps is continuing tests of one-man helicopters for small unit reconnaissance, liaison, artillery observation, and wire laying. Included in the tests has been the Gyrodyne *YRON-1* helicopter weighing 425 pounds empty. This vehicle is powered by a 62 horsepower Porsche engine turning twin counterrotating rotors. Maximum speed is 72 miles an hour, range is 60 miles, and service ceiling is 6,500 feet. Cruise speed is 50 miles an hour.

Also under consideration is the *XROE-1* which weighs 300 pounds, uses a single rotor and a tail rotor, and has a cruise speed of 50 miles an hour. Range of the *XROE-1* is 27 miles.—News item.

Army Accepts 'Caribou' Aircraft

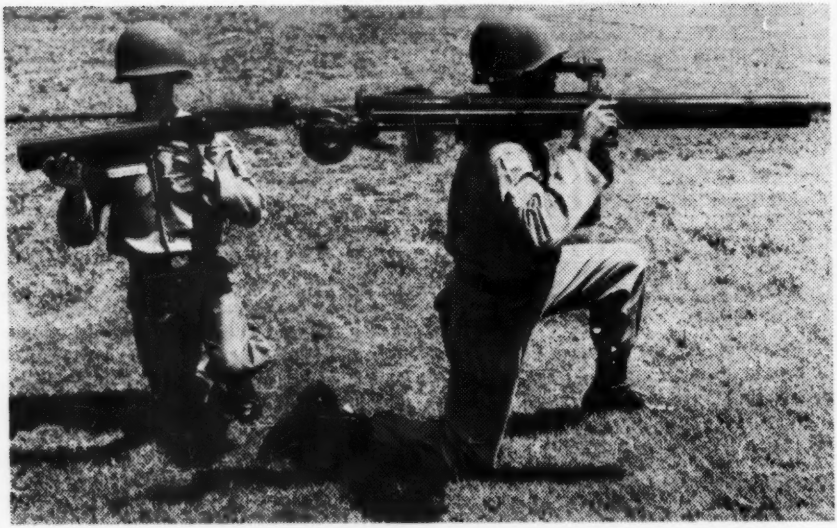


US Army Photo

The *Caribou*

The US Army has accepted the first three *Caribou* (*YAC-1*) short takeoff and landing aircraft from the manufacturer. The largest transport aircraft to enter the Army inventory, the *Caribou* is a 32-passenger plane with a cargo lift capability of three tons. Unique features of the aircraft include its ability to fly at very low speeds and to operate from improvised airstrips as short as 850 feet in length. It can take off and clear a 50-foot obstacle in just 460 feet with a 20-mile-an-hour headwind. The gross weight of the *Caribou* is 26,000 pounds. It is 72 feet long and has a wingspread of 96 feet. A large rear loading door provides access to the cargo compartment and permits rapid jettisoning of cargo in airborne operations.—News item.

New Recoilless Rifle



US Army Photo

90-mm Medium Assault Weapon

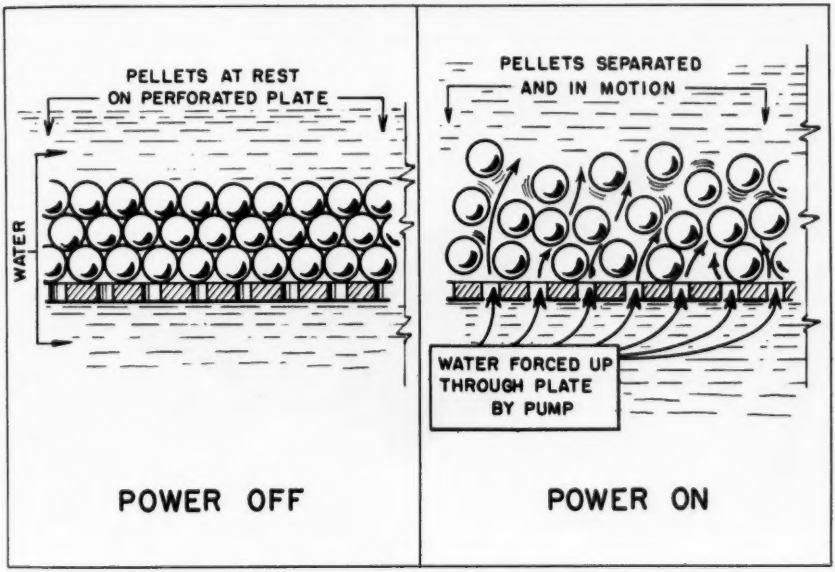
The development of a new 90-mm recoilless rifle has been announced by the Army. Designated the Medium Assault Weapon (MAW) the four-foot long, 35-pound weapon uses a low-velocity nine-pound shaped-charge round and is said to carry the punch of a medium tank gun. It will be employed by two-man teams of the infantry platoon and can, if necessary, be loaded and fired by a single soldier. The 500-yard effective range attributed to the MAW is twice that of the 3.5 bazooka used during the Korean war.—News item.

More Air-Cushion Vehicles

The application of the air-cushion principle to military vehicles is attracting considerable interest in the research and development field. The Army, in connection with a Maryland research firm, has developed one such vehicle and demonstrated its ability to rise off the ground and maneuver in level flight. A similar vehicle measuring 32 feet in length and 24 feet in width is under development by a Washington, D. C. firm as an over-the-water vehicle. The Army Transportation Research and Engineering Command at Fort Eustis, Virginia, has entered into a contract with a major industrial firm to investigate the feasibility of air-cushion vehicles for Army applications.

The same agency recently displayed a prototype "flying scooter" developed by Princeton's James V. Forrestal Research Center which weighs 120 pounds and can carry three persons at speeds of 15 miles an hour. The prototypes developed to date including the British *Hovercraft* (MR, Oct 1959, p 83) and the United States Navy's *Skimmer* (MR, Oct 1959, p 80) employ a low-pressure column of air ejected through vents on the underside of the vehicle to lift and maintain it above the ground.—News item.

AEC Developing Simple Reactor



Liquid fluidized bed reactor

The Atomic Energy Commission, in conjunction with industry, is developing a new, simplified, and highly advanced nuclear reactor system. Called the liquid fluidized bed reactor, it will eliminate the cumbersome control rods required by conventional reactors and the complex actuating system associated with them. It also is expected to reduce fuel fabrication costs and to make it easier to recover fuel after use. The new reactor will use a heap of pea-size pellets of fissionable material immersed in liquid inside a cylinder.

Because a power-producing chain reaction can take place in such a system only when the pellets are separated from one another by a precise distance, the reactor will be turned on simply by forcing more liquid up through the bottom of the cylinder. This will cause the pellets to rise slightly and move apart as the liquid flows upward through the "bed." When the flow rate is reduced again, the gaps between the pellets will disappear and the chain reaction will cease. (Present-day reactors are turned on and off by the precise movement of metal control rods into and out of the core.)

The new reactor design will contain a built-in safety mechanism since any decrease in the liquid flow rate would cause the pellets to fall back into a close heap at the bottom of the core and thus cut off the power output.—Commercial release.

Electronic Test Facility

The Army plans to construct a 30 million-dollar electronic environmental test facility at the Electronic Proving Ground, Fort Huachuca, Arizona. A contract for construction is expected to be awarded in the near future.—News item.

Hedge-Hopping Bomber

B-58 in flight

A United States Air Force *B-58 Hustler* bomber has successfully demonstrated its capability of performing low-level attacks against vital enemy targets. In tests to determine the ability of the aircraft to perform long-range low-level flights, a *Hustler* flew a 1,400-mile course across four western states less than 500 feet above the ground and at 700 miles per hour. The purpose of such flights is to show the feasibility of low-level penetration of enemy radar defenses. The *B-58* is reported to be a Mach 2 aircraft powered by four turbojet engines. Scheduled for production during the current fiscal year are 32 *B-58's* for the Strategic Air Command.—Commercial release.

Reductions In MSTS Fleet

The Navy has announced a six-ship reduction in the Military Sea Transport Service (MSTS) fleets operating in the Atlantic and the Pacific. The reduction will be completed in January 1960. The ships recently mothballed or scheduled for deactivation this month include the *Goethals*, the *Shanks*, the *Ainsworth*, the *O'Hara*, the *Funston*, and the *Gibbins*. All are of the *C3* type of transport. This reduction will leave seven MSTS vessels operating in the Pacific and 10 operating out of New York.—News item.

Frozen Blood

Experiments with frozen human blood and frozen blood components may make it possible to meet the heavy demands caused by mass casualties which may be expected during any future war or during local disasters. Naval doctors at the Chelsea Naval Hospital in Massachusetts have used blood cells that have been stored in the frozen state for as long as three years with no apparent unfavorable reaction in the patients.—News item.

Dogs To Guard Missile Sites

More than 1,000 dogs will be added to the Army's canine units by mid-1960 to provide increased security for selected missile sites across the Nation. The Army's Quartermaster states that there will be a continuing requirement for a large number of dogs for security work.—News item.

More 'Lacrosse' Units To Be Activated

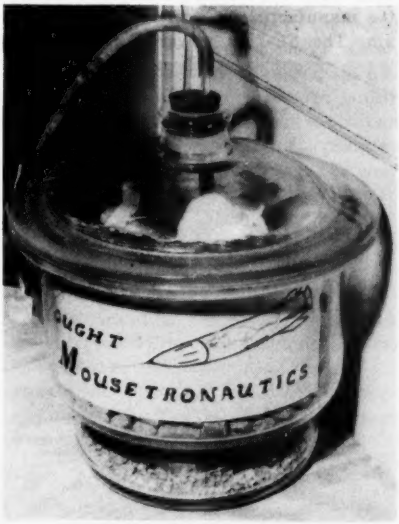
Three additional battalions of *Lacrosse* missiles are scheduled for activation to bring the Army's total to seven such units in active service (MR, Nov 1959, p 84). The new units will be designated the 5th Missile Battalion, *Lacrosse*, 40th Artillery; 5th Missile Battalion, *Lacrosse*, 39th Artillery; and the 5th Missile Battalion, *Lacrosse*, 33d Artillery. The *Lacrosse* is a ground support weapon which supplements tactical air or conventional artillery fire. The weapon is a swept-fin solid propellant, surface-to-surface missile which may be launched from a 2½-ton truck and is guided to its target by a forward observer utilizing radar control.—News item.

US Army Photo

***Lacrosse* on a 2½-ton carrier**

'Mousetronauts' In Space Research

White mice, living in a sealed plastic world of their own, are contributing to man's knowledge of how to live in space. The mice have lived in their plastic environment for several weeks now without apparent adverse effects. The ultimate objective of the experiment is to develop a nearly self-sustaining system which will provide oxygen, food, and water for man, and allow for reprocessing much of human waste. Man requires approximately eight pounds of food and water and 340 quarts of oxygen daily. Any reduction in requirements that can be achieved by regeneration within a space capsule will reduce materially the thrust necessary to place the capsule in orbit. Connected to the mouse jar in the experimental setup by a system of pumps and tubing, is a plastic tank in which about four quarts of life-giving algae and water form a dark brew. With this airtight system the algae provide oxygen for the mice and the mice provide carbon dioxide for the plant. Currently, the mice are being fed laboratory food in pellet form. In later experiments they will be fed algae from the tank.—News item.



Space mouse

GREAT BRITAIN

'SC-1' Displays VTOL Capabilities

The radical delta-wing *SC-1* VTOL research aircraft has successfully completed free vertical takeoff and landing tests at the manufacturer's airfield in Great Britain. The *SC-1* is powered by five Rolls

***SC-1* in hovering flight**

Royce *RB.108* turbojet engines, four of which are mounted vertically in a central engine compartment in the fuselage and are used to provide lift. The fifth exhausts horizontally at the tail of the aircraft to provide forward thrust. Stability control in hovering flight is provided by high-pressure air nozzles located on the wingtips, nose, and tail.

The four lifting engines are mounted in pairs, each pair swinging on an axis so that the lifting thrust center may be directed fore and aft on transition from vertical to forward flying, and vice versa. After vertical takeoff, the engines are inclined to the rear to provide a forward thrust component, and before landing they may be inclined forward to give a braking thrust.—News item.

'Rotodyne' As Flying Crane

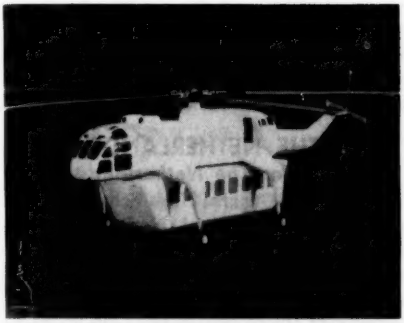
Recent experiments with the *Rotodyne* helicopter as a flying crane included the lifting, transporting, and emplacing of a 103-foot bridge section. The bridge section, which was almost twice the length of the aircraft and was 10 feet wide and seven feet high, is believed to be the largest structure ever lifted by air. Large wooden fins, apparent in the accompanying photograph, were affixed to the bridge section to stabilize the load and to prevent it from yawing at high forward speeds. The *Roto-*

***Rotodyne* lowers bridge into position**

dyne was originally designed as a civilian vertical takeoff airliner. A military version with a 200-mile-per-hour, 20,000-pound lift capability is now in production.—News release.

'Westminster' Helicopter

The British-designed and built *Westminster* helicopter, a bug like air vehicle (MR, Jan 1959, p 80) is designed to lift cargo pods suspended below the fuselage. A recent model features a prefabricated medical ward capable of accommodating up to 40 casualties. The military advantages of this configuration and the many purposes to which it could be adapted are readily apparent. The test prototype of this aircraft was first flown on 15 June 1958. Current versions measure 70 feet in length and are reported to have a payload capacity in excess of 13,000 pounds. —News item.



***Westminster* with hospital pod**

CANADA

Nuclear Capability

Canadian Defense Department officials have announced that the Royal Canadian Air Force's new *F-104G* fighter bombers will be fitted for arming with nuclear weapons. This announcement was made concurrently with an announcement by the Minister of External Affairs that Canada and the United States have put into effect a further agreement for the use of nuclear weapons for mutual defense. It is reported that current plans also call for nuclear arming of the *Bomarc* and the Canadian Army's *Lacrosse* surface-to-surface missiles.—News item.

NORWAY

Nuclear Reactor In Operation

The 10 million-watt Halden nuclear reactor, buried in the mountains of southeast Norway, now is in operation. This reactor is the only known reactor in the world to be moderated by boiling heavy water. It is owned by the Norwegian Atomic Energy Institute, and will be operated jointly by 12 member nations of the Organization for European Economic Cooperation (OEEC). Among the 30 scientists actively engaged in the work are several American nuclear specialists.—News item.

PHILIPPINES

US-Philippine Agreement

A memorandum signed by representatives of the Philippine and United States Governments covering mutual defense arrangements shortens the 99-year lease previously held by the United States on bases in the Islands to 85 years. The memorandum also binds the United States to consult with the Philippines before using the bases to support combat operations other than those linked directly with United States-Philippine mutual defense and Southeast Asia Treaty Organization (SEATO) treaties. In addition, the United States has agreed to consult the Philippines before setting up missile sites in their territory.—News item.

POLAND

Helicopter In Mass Production

The *SM-1*, a Polish version of the Soviet *Mi-1* helicopter, is in quantity production and a number of the aircraft are now in service in the Polish armed forces. The first *SM-1* was completed in the spring of 1956 and subsequent models have included liaison and ambulance versions. It is a three-place aircraft equipped with one 575 horsepower engine, a three-blade main rotor, and a three-blade tail rotor. It is reported to have a maximum speed of 190 kilometers an hour.—News item.

AUSTRALIA

'Sidewinder' For The RAAF

A Royal Australian Air Force Avon *Sabre* jet has made the first test of the United States *Sidewinder* air-to-air missile which recently has been adopted by the RAAF. The test, in which the weapon destroyed a target rocket 30,000 feet in the air, was for the purpose of checking a prototype installation on the Australian-built jet.—News item.

Space Research Program

The Australian Academy of Science is asking the Australian Government to finance a two-year rocket and balloon program of space research. Included would be studies on circulation of the upper atmosphere, electrical properties and emission of light in the upper air, meteoric dust, and cosmic rays. The *Skylark* would be the rocket vehicle used in this program. Numerous successful firings of the *Skylark* have been conducted at the Woomera Rocket Range.—News item.

Electronic Rifle Target

Australian authorities have developed an electronically operated moving target for rifle marksmanship training that is reported to be superior to target devices currently available in the United States and the United Kingdom. Now in the final test stage, the target is capable of registering two identical scoring shots and is particularly adaptable to the *Trainfire* method of marksmanship training.—News item.

SWEDEN

Rocket Probes Of Aurora Borealis

Swedish scientists, utilizing instrument-carrying rockets, are preparing to investigate causes of the northern lights. The luminous phenomenon which begins approximately 60 miles above the earth's surface will be explored by rockets fired to altitudes of 75 to 150 miles.—News item.

PUERTO RICO

New US Signal Installation

The United States Army Caribbean Signal Agency now is in operation at Fort Allen, Puerto Rico. One of two new signal communications agencies recently established by the US Army Signal Corps, the Fort Allen agency is designed to increase the capabilities of the worldwide Army Command and Administrative Network. A second installation, the US Army Asia Minor Signal Agency, was recently activated at Ankara, Turkey.—News item.

THE NETHERLANDS

'Hercules' For The Netherlands

Lieutenant General Heye Schaper, Chief of Staff of the Royal Netherlands Air Force, accepted the first *Nike Hercules* missile system on behalf of his government at a recent ceremony at Fort Bliss, Texas. A cadre of Dutch airmen has been in training with the advanced missile system at Fort Bliss since April 1959.—News item.

COMMUNIST CHINA

New Helicopter In Production

The Communist Chinese Government is reported to have a new multipurpose helicopter in production designated the *Whirlwind 25*. Limited information from a Communist-controlled source indicates that the *Whirlwind 25* compares favorably with the best of its kind in altitude, cruising speed, and load capabilities.—News item.

BRAZIL

Nuclear Powerplant

Construction will commence early next fall on a 120- to 150-thousand kilowatt nuclear powerplant to be located between Rio de Janeiro and São Paulo. A project of the International Agency for Atomic Energy, this plant will include the first nuclear reactor to be constructed in Latin America. Total cost of the project is estimated to be between 40 and 45 million dollars.—News item.

USSR

Manned Space Flight Predicted

The Soviet Union will attempt manned flight into space sometime in the spring of 1960, according to an unconfirmed British report. The report states that the rocket which will carry the first spaceman is undergoing final tests at a closely guarded base in central Asia. Recent reports indicate that the Soviet astronauts have been selected and are undergoing extensive testing and training similar to that now being engaged in by United States astronauts.—News item.

Superglass

Scientists of the Soviet Union have developed a material called *Sital* which is described as a microcrystalline glass and is said to be harder than steel but lighter in weight than aluminum. The new glass will be used for machine parts, pipes, and for the manufacture of containers for liquid chemicals.—News item.

ARGENTINA

New Antitank Weapon

A new antitank weapon, similar to the United States *Ontos*, has been developed for use by the Argentine Army. The weapon consists of a hexagonal-shape bundle of six 105-mm recoilless rifles mounted on a self-propelled tracked vehicle. Exhaust gases from the weapons are deflected laterally permitting the crew to stand behind the tubes.—News item.

FRANCE

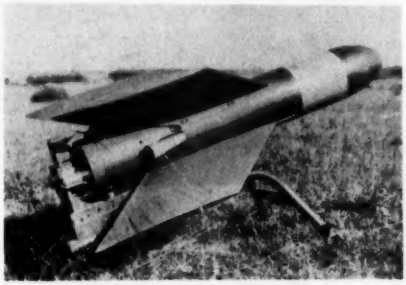
French Missiles Widely Accepted

The French-built *SS-10* and *SS-11* wire-guided antitank missiles are receiving wide acceptance among Western European countries. The manufacturer is reported to have sold about 28,000 of these missiles to 11 countries, including France, the United States (MR, Jul 1959, p 76), West Germany, Italy, Sweden, Denmark, Norway, Israel, Canada, Great Britain, and Switzerland. These missiles virtually have become standard NATO equipment except in Great Britain. The British recently have adopted the Australian-designed *Malkara*

***SS-10* antitank missile**

missile (MR, Dec 1959, p 74). Successful United States tests of the *SS-10* and *11* have included firings from fixed-wing and rotary-wing aircraft against a variety of targets.

The manufacturer is reported to be developing the *SS-12*, a larger version of the missile with much greater range. The *SS-12* is not to be wire guided and even-



***SS-11* antitank missile**

tually may be capable of carrying a sub-kiloton nuclear warhead.

Contributing to the popularity of these missiles is their extreme accuracy and relatively low cost—about $750 for the *SS-10*, and about $1,150 for the *SS-11*.—News item.

MILITARY DIGESTS

RED CHINA AND CENTRAL ASIA

The military strength of Communist China became sharply apparent upon her entrance into the war in Korea. There has been ample evidence that Mao and his supporters have spent the period since then in consolidating their political, ideological, and military positions. In spite of recurrent rumors of internal dissatisfaction, there have been no overt actions to date which would discredit Red China's new-found power. Much of this strength is predicated on Soviet industrial and technical support. Russia's technical progress in the past 15 years is proof, however, that yesterday's backward nation can be tomorrow's industrial power. For these reasons, and because of her position as the center of Communist influence in Asia, it is well to take a look at what has happened and what is now happening on Red China's borders and on the Chinese mainland. The following articles have been selected to provide an insight into the current situation in Central Asia.—Editor.

SOUTHEAST ASIA
USSR
MONGOLIA
CHINA
TIBET
LHASA
PEIPING
SEA OF JAPAN
KOREA
YELLOW SEA
EAST CHINA SEA
PACIFIC OCEAN
SAKHALIN
JAPAN
TOKYO
TAIWAN
THE PHILIPPINE ISLANDS
SOUTH CHINA SEA
NORTH VIETNAM
LAOS
THAILAND
CAMBODIA
SOUTH VIETNAM
MALAYA
SINGAPORE
BORNEO
SUMATRA
BURMA
BHUTAN
NEPAL
SIKKIM
EAST PAKISTAN
BAY OF BENGAL
INDIA
DELHI
CEYLON
PAKISTAN
AFGHANISTAN
ARABIAN SEA

The Development of the Chinese Red Army

Translated and digested by the MILITARY REVIEW from an article by Dr. N. von Ostrowska in "Wehrkunde" (Germany) May 1959.

ANTIQUITY'S venerable schools of philosophy, which in ancient China exerted considerable influence, advocated classical education in personal bearing and conduct and condemned the military profession and the waging of war for unjust reasons. "In the entire period of spring and autumn (722-481 B. C.) there was not waged one single just war. At best, some were less unjust than others." Mo-tsi, the scholar, finds a similar formula:

The killing of a person is a crime and is punished with death. According to this principle, the killing . . . of a hundred persons is a hundred times more unjust and must be punished a hundredfold. All enlightened people of the world know this and condemn killing as being a crime and yet, in the case of a great injustice such as a war against states—during which many people are killed—they do not condemn it but on the contrary approve of it. Actually, they do not know what is right and what is wrong.

These fundamental teachings that had been evolved in ancient China have been eliminated by "modern" times and the Yellow Communists have definitely discarded them. The hydra of Yellow communism strives to establish a great military power, which has no equal in history, not only for the purpose of defending the border of the country but also to terrorize the Chinese people. This power serves to expand the territory, as in the case of Tibet; thus Yellow communism is in diametrical opposition to the spiritual inheritance of the past.

Foundations in History

It appears important to outline, first of all, a short sketch of the Chinese Red Army's historical development which reaches back into the 1920's. The Chinese Army has been proved and hardened in civil wars and against enemies from the outside. When the Communists came into power in China on 1 October 1949, they had a disciplined military instrument which was well-suited to support the new masters.

The development of the Chinese Red Army can be divided into several stages. The first stage encompasses the creation of the Red Army and the Second Revolutionary Civil War, which occurred during the period from 1927 to 1936. During the First Revolutionary Civil War from 1924 to 1927, the Communist Party of China and the Kuomintang formed a unified front under Sun Yat-sen. Thus the National Revolutionary Army was the first combat element of the Chinese Revolution. Within this army individual troop units were under the direct command of the Communists. This also is the period (May 1924) during which the famous Whampoa Military Academy was founded, with Chiang Kai-shek as its president. The political department was in the hands of today's Prime Minister of Red China, Chou En-lai. This academy has the purpose of creating the foundation for a qualified military officer corps and, therefore, a unified regular Chinese Army. There had been nothing of the kind since the revolutionary chaos of 1911.

Communist Uprising

After Sun Yat-sen's death on 12 March 1925, Chiang Kai-shek took over the leadership of the Kuomintang and in 1927 established a right wing government in Nanking in opposition to the left wing government in Hankow. The Second Revolutionary Civil War began on 1 August 1927 with the Communist uprising of Nan-

chang and the peasant revolt in the provinces of Hunan, Hupeh, Kiangsi, and Honan. By April 1928 a uniform Chinese Red Army had emerged and was engaged in solidifying and expanding its bases. In 1930 this army numbered 60,000 troops, and shortly thereafter 100,000 men. There were 15 bases created whose central point was located in the province of Kiangsi.

During the first four annihilation campaigns which Chiang Kai-shek led against the Communists, the Chinese Red Army increased to 300,000 men. During the Kuomintang's fifth campaign the Red Army suffered a serious setback due to tactical errors, but the main body of the army was saved from annihilation by a defensive maneuver toward the north. In the areas of Shensi, Kansu, and Ningsia, new strategic bases were created.

The War Against Japan

The second stage in the development of the Chinese Red Army took place during the war against Japan from 1937 to 1945, when again a so-called "unified" front was formed with the Kuomintang. The Eighth and the new Fourth Army were formed at this time and developed extensive guerrilla warfare in the rear of the Japanese forces, thus pinning down a sizable number of the Japanese operating in China.

Further details on the development of the Chinese Red Army were provided by Mao Tse-tung in a speech on "The Government by Coalition," given on 24 April 1945 before the 7th National Congress of the Communist Party of China:

At the time of this report our regular troops have attained a strength of 910,000 men, while our People's Militia has grown to 2,200,000. Our regular troops are still a few hundred thousand short of the existing Kuomintang army.

Mao Tse-tung declared in the same speech with reference to the two battlefronts:

In the last years practically no serious fighting has taken place on the Kuomintang front since the sword of the Japanese aggressor was mainly directed against the battlefront of the liberated sectors.

The third phase of the development of the Chinese Red Army encompasses the Third Civil War from 1946 to 1949. The numerical strength of the Red Chinese troops—which numbered 1.3 million men at the end of the war against Japan—increased to about four million men during this civil war. Regular armies came into being which were organized in army groups and fronts. During the last phase of the war against Japan the Chinese Red Army consisted of four large frontline elements, the First, Second, Third, and Fourth Field Armies. In addition, 1.7 million Kuomintang soldiers went over to the Chinese Red Army in closed units.

Consolidation Under Red Leadership

The final structural organization of the forces was completed after the formation of the Red Chinese Government. During its 27 September 1949 session, the People's Council of Red China defined the future structure of the armed forces. According to it, they were divided into the People's Liberation Army, the People's Militia, and the People's Police. Army and militia (reserve forces) formed the foundation of the military system of Red China. The highest organ of all the armed forces is the People's Revolutionary Council whose chairman is Mao Tse-tung. The members of the military council are the commander in chief of the army, the deputy commander in chief, the chief of staff, and the deputy chief of staff.

Until 1949 the army had consisted of soldiers who had more or less volunteered for the service and had been recruited in the so-called liberated areas. According to the new constitution, which was adopted during the first session of the National People's Congress on 20 September 1954, everybody was subject to compulsory military service. Article 103 states:

XUM

The defense of the fatherland (homeland) is the sacred duty of every citizen of the People's Republic of China. According to the law, military service is a duty of honor of the citizens of the People's Republic of China.

Compulsory Service

In July 1955 corresponding decrees were issued that put the compulsory military service law into force, with definite time limits for the duration of duty and deferment. This law was renewed and added to periodically. Details can be found in the law for recruitment of the year 1957 which stated:

In accordance with the regulations of Article 16 of the Recruitment Law, all male citizens who have reached the age of 18 are drafted for active service. Further, those who in the draft year 1956 were deferred and who have now attained the age of 19 are drafted, according to the regulations of Article 29 of the Recruitment Law and based on the decree of the States Council. Counterrevolutionaries and those who have forfeited their political rights are considered unworthy for military service; further, those who are under arrest or are under observation (surveillance) on the part of official agencies are not drafted. . . . The deferring of military service is possible for the duration of one year or longer.

The average length of military service is four years.

In accordance with the Compulsory Military Service Law, those who have been drafted for military service in 1954 and who belong to the ground forces will terminate their service in 1958. This can be extended for one additional year.

Article 10 of the Compulsory Military Service Law says, among other things:

In accordance with the demands of the army and the need for personnel, those who have served their time in the service can be extended for a year but no longer.

A Nation of Soldiers

The existing structure of the armed forces, consisting of the army, the militia, and the People's Police, was changed inasmuch as the military authorities decided toward the end of 1957 to merge the reserve with the militia into a single force. The army militia corps is now subdivided into two groups, namely, those reservists who are under 30 years of age and the reservists under 25 years of age. Both categories belong to the army militia.

The citizens' militia, which was created in 1958 is in addition to the army militia. It does not have a real troop character but is trained and organized on a military pattern.

Under the motto, "Everybody a soldier," this citizens' militia, to which both men and women belong, was created simultaneously with the People's Communes. The citizens' militia was organized into 155 divisions, 345 regiments, 392 independent battalions, and 153 independent companies. In the province of Honan the entire population is militarily organized; 20 million men and women belong to the citizens' militia. In the province of Szechwan the citizens' militia numbers 30 million. In Chekiang and in Inner Mongolia, every third citizen belongs to the citizens' militia. Of a population of 14 million in the province of Fukien, almost all citizens between the ages of 16 and 50 have joined the citizens' militia.

By militarily organizing the entire population, it was intended to cause all individuality to be merged into collectivity. But this militarization of the entire population has another aspect, namely, that this newly forged sword could one day direct itself against the Communist leaders who are now in power in Peiping. Thus it becomes understandable that the leading authorities agree only hesitatingly to a general equipping with weapons and that they particularly stress the political education of the militia.

During a conference of the chiefs of staff of the army this problem was stated as follows:

The transformation of the entire nation into soldiers and their organization into large units of citizens' militia divisions, represents the grandiose realization of the military ideology of the chairman Mao Tse-tung and, at the same time, is a manifestation of the patriotic and Communist spirit of 600 million people.

Role of the Militia

A leading newspaper says that the state, under the dictatorship of the proletariat, not only needs a powerful standing army but also a national home defense composed of citizens of both sexes. In arming the population the following problems arise:

1. The *missions* of the members of the citizens' militia as complementary reserve troops to the regular armed forces must be defined and limited.

2. *Organization* of the militia is based on three principles:

a. Preservation of absolute leadership of the Communist Party of China.

b. Coordination of the militia organizations with the production organizations.

c. The purity of the army must be safeguarded.

3. *Training* of the militia is to be conducted daily for one or two hours *during the recesses in production.* The basic training amounts to about two months.

4. *Political education.* The population must be armed with ideological weapons. The members of the citizens' militia receive no live ammunition, which is granted only to the reserve (army militia) and the regular army units. The citizens' militia must be educated to fulfill their duty with regard to the defense of the homeland.

Estimates based on information from the newspaper, *Hsin Hua,* Peiping, show that the standing army has—in all three services, ground forces, navy, and air force—a strength of about three million men. There are approximately 17 million reservists and about 30 million fully trained members of the citizens' militia.

Training of the Officer Corps

Within the framework of the modernization of the Red Chinese armed forces and in order to train extensively the high command echelons of the officer corps, the Academy for Military Science of the Chinese Red Army was founded on 15 March 1958. The academy has the mission of guiding the study of military sciences. Marshal Yen Chien-ying, President and Political Commissar of the academy declared in his commencement speech that the academy, in accordance with the principles of Marxism and Leninism and the guidelines provided by Mao Tse-tung in his works, is to make use of the latest scientific and technical developments. It will conduct a planned research program which will be carried on in coordination with progressive Soviet military science and the true situation as it is in China, in order to accelerate the modernization of the army. In addition to this academy there exists other instruction centers for specific military instruction, such as schools for pilots.

Unique organizations known as "experimental companies" have the purpose of improving military leadership. The methods that are used for this generally can be divided into three categories:

1. The officer method which provides for the troop commanders taking over the duties of the company-party leadership on a training basis.

2. The soldier method under which troop commanders wear the simple uniform of the private soldier, and are assigned to platoons and thus accumulate personal experience from the viewpoint of the basic soldier.

3. The combined officer and soldier method under which the troop commanders serve in their normal position as officers, but daily undergo the basic drills of the soldier.

XUM

With the creation of experimental companies, many troop commanders and party officials have performed the work of the company staffs. Many party officials, who were assigned to battalions and companies, relinquished their ranks and posts and took over supervisory and assistant functions in the lower service grades. The experiment just described culminated in a final decree which was issued on 20 September 1958 by the General Political Section of the army. According to this decree, all commanders of the army must serve one month each year as a soldier unless they are too old or too ill. Young officers must serve as enlisted men for at least six months of their first year.

Political Ideology

The party and its ideology play a big part in the Chinese Red Army. As early as 1956, the Communist Party of China began to influence the army in order to make of it a truly party-political and state-political instrument. However, there still are great difficulties to be overcome. The leading army newspaper gives the following details in this regard:

The work of the party committees on all levels of our army were much improved in 1956. Important questions about the troops were discussed and collective decisions were made. These decisions were given as guidelines to be executed by all army commanders and political commissars for the troop command. In the past, many party committees had fallen into the habit of holding meetings of the permanent committees rather than collective plenary sessions. The role of collective leadership of the party committees was thereby reduced . . . the reorganization of the party sections in the army were mostly concluded in the second half of 1956. Subsequent to the accomplished reorganization, the party sections within the companies underwent a purging and their leading role was strengthened thereby. . . . In the past there has been discord between party sections and army units. After the reorganization these symptoms could be largely eliminated.

The army is a military instrument and as such it bears its own specific character in all countries. But it must not be overlooked that in the Chinese Red Army, as in all Communist armies, the political factor is of great importance and has a decisive function. The introduction of politics into the army in Red China seems to have encountered considerable difficulties. The Yellow Communists are making every effort to further the ideological education of the troops. The General Political Section of the army issued a decree on 4 September 1957, which said, "Socialist" education is to be stressed in all company units. As topics for instruction and "debate" the following are enumerated:

1. Superiority of the cooperative.
2. The purchase and sale of grain and other farm products in common.
3. Relations between workers and peasants.
4. Observance of discipline and improvement in efficiency.
5. Relations between officers and troops.

This educational work is to be conducted in the form of group debates where erroneous views are criticized and where those who say them are to be convinced of their mistakes.

The first three topics serve general political-ideological purposes. Their simultaneous objectives are brainwashing and the blotting out of understandable discontentment with respect to the measures of the new regime. These are mainly aimed at the farm population which is 80 percent of the entire population. The last two topics are concerned with military matters as seen from the ideological viewpoint.

This political-ideological education plays a considerable role in the Chinese Red Army and cannot be separated from the purely military training aspect. In spite of the strict duty regulations and the

many detailed rules, it is difficult to determine to what extent these decrees—especially those on political indoctrination—are really being complied with and what practical value they have. While the system of political commissars who supervise the activity of the army officers has been adopted from the Soviet Union, and while it is further attempted to introduce politics into the officer corps, it appears that it will be a long time before political reliability will have pervaded the entire army. On the other hand, it would be irresponsible to underestimate this immense mass army.

An Instrument of National Power

The great military parades that are staged on important holidays of the Communist regime in Peiping and other places, do not hide the fact that the equipment of the troops is not yet of the most modern type. The Soviet Union is to be considered the principal provider of technical armament. This is particularly true as far as tanks, planes, and small firearms are concerned. With respect to atomic armament an agreement has existed for several years concerning support between the two countries. Within the framework of this and an additional accord, there probably are provisions that arrange for the exchange of technical data and for cooperation in the sphere of nuclear physics but not for the delivery of nuclear weapons by the Soviet Union to Red China. The installation of nuclear launching sites in the border countries, such as Tibet, are handled and directed exclusively by Soviet military specialists. This probably is based on a special agreement between the two countries.

The combat strength of the army is considerable because of the experience of the Chinese Red Army in regular warfare as well as in partisan and guerrilla warfare. Operations during the Chinese-Japanese war as well as the combat activities during the civil strife resulted in a rapid development of the art of war by the Red Chinese. To be pointed out in particular is their ability to effect rapid concentration of their main forces and to conduct quick and efficient maneuvers.

The fighting spirit of the army is evaluated as being on the negative side, since the individual soldier is unhappy about the political pressure that is exerted throughout the country and that reaches within the folds of the family. Attempts are being made to relieve this malcontent through constant political education, but such efforts still leave the morale of the army at a low level in spite of iron discipline. Furthermore, the morale of the army is not heightened by the fact that the troops in the provinces are, at times, inadequately equipped and poorly provided with items of daily necessity—although, in general, it must be said that the army fares better than the civilians.

The Yellow Communists in Peiping are making every effort to develop as rapidly as possible a strong and modern army numbering in the millions. This threat must be taken seriously for its great number alone, even if its armament is not altogether up to date.

MOVING?

If you are moving, please notify the MILITARY REVIEW, Fort Leavenworth, Kansas, of your change of address. Be sure to include your name, *old* address, and *new* address.

The Development of Communes in Red China

Digested by the MILITARY REVIEW from a copyrighted article by Staff Sergeant P. G. Gittins in the "Australian Army Journal" July 1959.

LIVING things do not grow at random; the plants and animals of the earth are organized into definite communities and when human beings settle in a place they become a part of the community. Usually they do not come alone, for with them come dogs, cats, poultry, fleas, bedbugs, cereals, and other familiars of the human community. In the ensuing struggle the newcomers generally break up the old communities and substitute new ones. But old or new, there are laws of community life just as binding as the laws of breathing or eating. If these laws are kept, men remain long and prosper in the land of their fathers. If the laws are violated, we have ghost towns, abandoned farms, and decayed empires.

Individuals of a human group—large or small—will establish homes, produce, gather, and store food, and establish a code of living. In doing these things they collaborate with their fellow men. We say that each of these communities has its own type of culture. It is by modifying his activities or his culture that man has been able to live in all parts of the globe, subsist on a wide variety of foods, and, in general, make adjustments that exceed the range possible to any other living animal.

Cities are social organisms that have grown out of men's desire for living together. Their locations are the product of geographic relationships, and their size, shape, structure, appearance, and function are, to an important degree, conditioned by factors of the local and regional environment. Ruralism was the universal way of life in primitive society because the activities by which early man supported himself required close contact with nature and a large area of land for each person. Despite the isolating tendency of ruralism, human beings seem to be instinctively gregarious, and out of this deep-seated propensity has grown the city and the town and an urban mode of living.

Urbanism has become so powerful an influence in human life that in most languages of the world the very term which we use to express larger social loyalties is citizenship or some cognate—a word referring to a city.

Clearly enough the activities of men that fit them for community life are learned, are the result of training, can be communicated by means of speech, or described and preserved in written records. These activities or this culture can be changed by invention or exchange with other groups and so adjusted to changing needs and conditions.

Culture, as we have used the word, is the means whereby men govern their relationships to each other and to the natural world in which they live. Ordinarily, a man is good or bad according to how harmoniously he fits into the culture of his group. A good desert dweller will not waste water; but a good Australian will use water lavishly rather than go unwashed. But the matter is not so simple. Cultures too may be good or bad. A good culture promotes harmony and collaboration among the people who share it. A good culture also promotes harmony with the laws of nature and so ensures its own permanence.

So it is that, while we consider a man good if he fits into the culture of his group, history has always considered him better and greater if he finds the means to improve that culture and so make it more harmonious and permanent. To secure such an improvement is, of course,

the unending task of the leaders of mankind. It is a baffling and intricate task, too, especially at this time when invention and rapid communication are producing so many changes.

Chinese Community Organization

The Chinese community organization, at one time composed of family units, is undergoing a gigantic convulsion. Mao Tse-tung has announced spectacular plans for an internal revolution which will bring Red China to the brink of complete communism within six years. The highlights of Mao's plan are as follows:

1. The "liberation" of all women from household chores.

2. The adaption of agricultural labor to industrial production.

3. The organization of the labor force on military lines to achieve rapid mobilization in case of war.

Mao's plan is, in essence, an attempt to hurdle the most painful period of Soviet development when Stalin squeezed the peasant class dry to provide means for rapid industrialization. Mao intends to turn the Chinese peasantry into an industrial labor force without urbanizing it, as both the West and Russia had to do during their industrial revolution. It will be similar to the cottage industry system that preceded the industrial revolution.

China's plunge into the commune system is of a kind and on a scale such as neither Stalin nor any other Soviet ever contemplated in their wildest dreams. Indeed, the Communists under Stalin abandoned the commune system as early as 1933 as being completely impracticable.

Mao, however, is aiming at "the transformation of man." He holds the doctrine of creating multipurpose masses. There is no way of knowing whether this fabulous concept will be accepted or will work, but the indications are that the Chinese people can take it for some years. They appear to be intoxicated with the new ideas pumped into them. There is said to be every prospect of the emergence of the largest and most highly disciplined community in the world, with a greater degree of adaptability than it has ever had before.

The commune extends far beyond agriculture and its ancillary occupations. It will control military, industrial, commercial, and cultural activities and is intended to become the basic unit of local administration.

The party magazine, *Red Flag*, states:

In the communes, industry (the worker), agriculture (the peasant), exchange (the trader), culture and education (the student), and national defense (the soldier) merge into one harmonious whole.

The communes will embrace all the people and property within an area approximating that of a county or township—running in typical size from 10,000 people up to several times that figure. They will replace the entire present system of government in rural areas. Thus they will be roughly the equivalent of a division or army corps and be organized in much the same fashion.

Although the communes' officers do not have precisely military rank in peacetime, there will be a chain of command and "militarization" of civilian life on a broad scale.

The communes will embrace all types of activity within their area—economic, cultural, educational, and military.

These communes are primarily devices to put China's entire rural population to work for capital construction on a grandiose scale. In communes organized to date, the Chinese are being drafted to build small steel and iron factories, to engage in reafforestation, to build dams and other irrigation systems, and other kinds of economic enterprises. The idea apparently is that, by the use of military methods and forced labor, Communist China can put to use effectively her main national resource —hordes of human beings, massed manpower—to push the nation forward on the

path of modernization and the building up of economic military power.

Establishment of Communes

When the Communists took over China in 1949, each village was assigned an administrative head who was responsible in turn to county and provincial administrators. Most farmers belonged to one of the 740,000 agricultural cooperatives established throughout the nation. The first communes were set up in Honan Province in April 1958 merely as a controlled experiment. During the summer the Communists swept most of the country's peasants from state-run cooperatives into the new organizations. Village chiefs have disappeared. The 740,000 cooperatives have been reduced to 26,000 communes in which the Communists claim to have enrolled 99 percent of the nation's peasants. Some communes have 300,000 members. Each unit is run by a Communist-dominated council which sets wages and working conditions.

Today, virtually all rural China lives under the commune system. The next step on Mao's plan was to be the complete regimentation of the city dwellers, already begun experimentally in Mukden (Manchuria), Peiping, and Shanghai. But recently it was announced that the Party Central Committee had decided to call a temporary halt in the plans for big city communes because of the "bourgeois ideology" still prevalent in the cities—in other words, because of the opposition of the prospective members.

Impact of Communes

The individual loses everything he owns when he joins a commune. If he has tools, he must "sell" them to the commune (but without getting paid). His garden plot and livestock also are taken over. His wife has to give up her cooking pots and household furnishings. Everything goes except the clothes they are wearing. All further clothing is issued by the government. Generally, the family moves out of its house and into segregated barracks. Children and the old folks live separately; so do the husband and wife. The basic social unit, therefore, is not the family but an all male or an all female platoon of 20 members. Rural life such as China has known for 4,000 years has disappeared almost overnight under the impact of communes.

China's peasant has discovered he is no longer simply a farmer. When the crops are in he cannot putter around the house, as he once did, or mend a pigsty, or merely rest. Instead, he is yanked out of the barracks before dawn and marched off to build roads, tear down other people's villages, construct more barracks, or melt cooking utensils down into pig iron so that the New China might have the 11 million tons of steel that had been set as the goal for 1958.

He needs a pass to leave the area in which he lives. When he starts out for work in the morning—after reveille, gymnastics, and a messhall breakfast—he marches off in formation under flags. India's Prime Minister, Nehru, recently described China as one big army camp, explaining, "They go to work at a certain time, they come back to lunch at a certain time, all together, the whole village, the whole commune." Not only the men, but the women, children, and the aged live in barracks too. In the cities, workers live in barracks next to their factories. There is military training for all.

In the People's Commune the members eat, sleep, produce, think, and act, not as individuals, but as an integrated social unit.

First Achievements

As a result of the industrialization (carried out by the Soviet method of five-year plans, and later by the introduction of the People's Communes) the country has begun to be more urbanized. Towns have expanded into cities, villages have turned into towns, and many parts of the country

have the appearance of a boom era. Because the town population is growing in size, its share of the membership of the Communist Party, which its members have always desired to see larger, is now increasing.

China's "Great Leap Forward" slogan for her 1958 economic program is producing solid achievements. The last six months have seen China launch her first 8,700-ton cargo ship, produce prototypes of five motor cars and 27 trucks, and fly her own small airplane, the *An-Two*, on internal routes.

China's big orders for foreign raw materials and equipment, which contrast with the parsimony of her expenditure on imports during the First Five-Year Plan, indicate a rapidly expanding economy. Britain's trade with China increased by more than half as a result of the growing demand for machine tools and steel products.

In the agricultural field Chinese planners, claiming that the country's peasants have defeated floods and drought, looked forward to a record food harvest. Irrigation projects last winter kept 100 million peasants building the dikes and canals which now cover half of the land under cultivation in China.

The wholesale compulsory drafting of city workers into the countryside, and severe restrictions imposed on the movement of peasants, have swelled the labor force on the farms by several millions. The Chinese newspapers report that millions of women are being liberated from housework to help their menfolk in the fields. In 1958, for the first time in history, China's food crops passed the 200 million-ton mark.

From a political control aspect, the party now has an even tighter control than ever before.

Disturbances and Internal Unrest

Today, if the communes could really promise Utopian conditions, persuasion might be all that the peasants need to convince them that this way of life is better than what they knew before. But since the essential purpose of the communes is to squeeze out every drop of capital and labor for the most ambitious industrialization program ever attempted in the history of the world, the communes cannot be made Utopian. They are, in fact, military compounds where men only have two days free each month, and women have four days free, and where long hours in field and factory are accompanied by periods of military training and political indoctrination.

There are valid grounds for believing that China may be obliged to resort to armed force in the communes, and to divert the people's attention from the local excesses by an external offensive. In Washington and Taipeh—where the hope that the Communists have bitten off more than they can chew is always apt to color opinions—there has been a belief for some time that China may be on the brink of an internal explosion. The most careful and sustained examination of the official Chinese publications does not support this view. The Tibetan revolt is too isolated from China, and the communes are too well-controlled by armed "red and active" cadres.

Even the most persuasive cadres are unlikely to be able to convince all peasants that this is a desirable way of life. And the party obviously has concluded that in the interests of industrialization, force will have to be used where persuasion fails.

At present, there are fears of an uprising in Kwangtung. Fishermen from this coastal province have been fleeing by the hundreds to the British Crown Colony of Hong Kong, all bringing reports of widespread unrest and discontent within the recently established communes. Refugees also are pouring into the Portuguese colony of Macao, and it was from this city that the Lappa Island uprising was reported and observed. Peasants from Fu-

kien Province have even tried to sabotage the communes. One member was executed for putting poison in 40 buckets of cooked rice. Reports of disturbances, counterrevolutionary movements, and executions on a large scale have been received from places as far away as the remote province of Tshinghai. Even the *Peiping Daily* mentioned that in Honan Province the communes were short of clothes, footwear, and bedding. Crime has had a sharp increase since the introduction of communes, particularly in the province of Shansi. It would appear that everywhere in China where the communes have been established, discontent, unrest, disturbances, and mass executions are natural, everyday occurrences.

Foreign Opinions of Communes

Without exception, the Western World has regarded the establishment of communes with nothing less than horrified revulsion. It is a system both foreign to the laws of nature and foreign to the laws of man.

Even China's senior Communist partner, Russia, has viewed the formation of communes with grave concern. During a recent interview by American Senator Hubert Humphrey, Khrushchev was reluctant to talk about them. When asked what he thought of the communes, he stated:

They are old fashioned. They are reactionary. We tried them right after the revolution. It just doesn't work. *That system is not nearly as good as the state farms and the collective farms. You know that they are based on the principle 'From each according to his abilities, to each according to his needs.' You know that that won't work. You can't get production without incentive.*

Conclusion

The political union of a people implies per se the use of force or power. In all political organizations power is either usurped by a few, or else granted by the many to those who control the state. Without power to organize and direct the nation and to administer its laws, there could be nothing but chaos and anarchy. It should be, in fact must be, recognized that some type of power, exercised by someone or some group, is essential in all political actions, and that power can derive from love and loyalty toward the leaders as well as from fear of them.

Bhutan, Kham, and the Upper Assam Line

Digested by the MILITARY REVIEW from a copyrighted article by A. R. Field in "Orbis" (United States) Nr. 2 Summer 1959.

TO SOME Indian statesmen looking northward toward their Himalayan frontiers, Mao Tse-tung must appear as the perennial "abominable snowman." Ever since the People's Liberation Army started its march south from Mukden in 1948, New Delhi has been evolving its own military answer: a sealing off along the line of the Himalayas and Upper Assam. This is a prodigious task, for the Himalayas rarely have acted as the barrier which small-scale maps and popular notions may have led many to believe. More than anything else, these mountains have acted as a giant sieve. There are literally thousands of passes which have never been charted on any map.

For centuries the northern borderlands of India, Nepal, Sikkim, Bhutan, and Upper Assam have resounded to the prayers of holy men and the tinkling bells of trading columns. In the springtime, floodtides of Mongoloid peoples have come southward through the Himalayas. They have moved

northward again, like an ebb tide, before the approaches of winter. Trade and marriage have constantly increased their number. It is significant that many sub-Himalayan Mongoloids have traditional links —through the sinews of Lamaistic Buddhism and trade—with peoples residing as far north as the Mongolian People's Republic and as far east as Szechwan. Any projection of a north-south, east-west cultural axis, with regard to these people, would intersect in Upper Assam. The realities of international politics forced current governments to introduce passports, visas, and military checkposts in areas where prayers and the begging bowl have long been the credentials for uninhibited passage. It is now evident, after a decade of constant diplomatic effort, that there still are wide gaps in the line New Delhi has attempted to draw. These gaps have become more significant in the wake of the Tibetan uprising and the increasing strains between Peiping and New Delhi.

Nehru Visits Bhutan

In recent years, Indian Prime Minister Nehru has established himself as a seasoned Himalayan traveler. Mr. Nehru's most recent trek—accomplished on pony, mule, and yak—was undertaken to reach the Thunderbolt Kingdom of Bhutan. On his arrival at Paro, Bhutan's traditional winter capital, Nehru addressed a public meeting. He spoke of the friendly and equal relations existing between India and Bhutan. He did not neglect to tell his audience that their very way of life came to them from India through the vehicle of the teachings of Lord Buddha. His words must have sounded strange to a people who look northward toward Lhasa for spiritual guidance. Nehru reminded his listeners that the world was changing fast: "Bhutan could not remain isolated, but any change Bhutan underwent would be in accordance with its own will and not because of pressure of other countries." The Indian statesman's words might have had a familiar ring to some of these Himalayan people. In the past, Mr. Nehru had also advised the Nepalese, prior to their revolution, that the world was fast changing and Nepal would have to change, else "there might be some pushing about later."

Government officials spent the next two days discussing technical aid, the need for the development of road communications between India and Bhutan, plus the "international situation." Indian officials were well-prepared to discuss road communications, for a preliminary survey of an all-weather road leading from Jainti—the railway terminus in Alipur Duar—to Tashichetzong on the Bhutanese border had already been completed. This road also connects with the North Trunk road from Bengal. The Bhutanese Prime Minister, Jigme P. Dorji, was told by Mr. Nehru that perhaps the Bhutanese Government might care to extend the Jainti road 100 miles cross-country beyond the 5,700-foot-high Sinchula. By treaty, India is responsible for the external affairs of Bhutan, but India has taken the position that "such guidance cannot be effective if the sole access to the kingdom lies through a third country—Chinese Tibet." A second major road is contemplated to run from Garubhada in Assam to Hatisar on the border. These developments are not pleasing to the Bhutanese who wish to do nothing that would cause the Chinese to take a closer look at their country. Mr. Nehru, in commenting on India's offer to help Bhutan develop, noted that the Maharaja had been reluctant to accept. "He is not at all happy. He could have had the aid during the last two or three years if he had asked for it."

The strategic importance of Bhutan, from the standpoint of India's political geography, cannot be overstressed. Bhutan is the pivot for the defense of India's northeastern frontier. An unfriendly or Chinese-dominated Bhutan would flank India's unstable position in Upper Assam. Indian independence and partition have

PROBLEM AREA OF ASIA
SINKIANG
LANCHOW
TENGKO
CHINA
LITANG
YANGTZE RIVER
BATANG
MEKONG RIVER
JYEKUNDO
CHAMDO
TSINGHAI
SIKANG
TIBET
LHASA
KHAM
ASSAM
BHUTAN
BURMA
EAST PAKISTAN
DACCA
KALIMPONG
DARJEELING
SIKKIM
KHAMBA
BRAHMAPUTRA RIVER
HIMALAYAS
KATMANDU
NEPAL
GAYA
CALCUTTA
BAY OF BENGAL
KANPUR
INDIA
LEGEND:
NORTH TRUNK ROAD FROM BENGAL
PRIMARY ROAD FROM LANCHOW TO LHASA
SECONDARY ROAD FROM JYEKUNDO THROUGH CHAMDO TO LHASA
0
200
400 MILES

left India proper with only a very narrow access corridor (the Assam rail link) leading into the State of Assam. East Pakistan abuts this corridor on the south. The continuing Indian-Pakistani strife over Kashmir now has been aggravated by sporadic clashes at various points along the East Pakistan-Assam border. In eastern Assam the Naga revolt has continued and the Naga rebel leader, Phizo, reportedly has slipped over the border and held discussions with the East Pakistani authorities at Dacca. It is not unlikely that these are some of the factors that influenced Mr. Nehru's trip to Bhutan.

Kham

Mr. Nehru returned to New Delhi on 2 October 1958, and stated that "obviously, conditions in Tibet are not fully normal." This, of course, was pure understatement. Even before the revolt erupted in Lhasa during March 1959, there had been persistent newspaper reports of sporadic fighting on the borderlands of Eastern Tibet, in an area called Kham. Much of this fighting had taken place east of Chamdo, in the Tengko-Batang-Litang triangle, although it was subsequently to spread westward to the Tibetan capital. Prior to the 1950 "liberation" of Tibet by the Chinese People's Liberation Army, the Tibetan *de jure* boundary extended up to Chamdo, close by the Upper Mekong River. Therefore, the Chinese Communists, after the "liberation" of Tibet, could not logically hold the Lhasa authorities responsible for strife east of the boundary, astride the Upper Yangtze River.

The Khamba people differ in dress, dialect, and physical characteristics from the people of Tibet proper, but they do have strong religious ties with the Lhasa Pontiff. The men who traditionally make up the Dalai Lama's bodyguard are giant seven-foot Khamba monks. The most important all-Khamba monastery is located at Chamdo. Thus this village has played a key role in the Chinese Communist administration of the Kham-Western Sikang area. The Chinese Communist Government, to placate the Khambas, sanctioned funds for the rebuilding of Khamba monasteries which were placed under air bombardment during the Khamba revolt of 1957. The reason for this Communist concession to religion is clear. To reach Chamdo, the Chinese must traverse the strategic triangle area which covers the fork of the Chinese-Tibetan highway leading west to Chamdo and northwest to Jyekundo. Jyekundo is astride the *primary* Chinese-Tibetan highway which extends from the railhead at Lanchow, through Sining, Chalaping, and then southwestward to Lhasa. The Katang-Chamdo-Lhasa road, although shorter, is more difficult and considered to be the *secondary* Chinese-Tibetan highroad to Lhasa. Khamba activities influenced the Chinese Communist Party-Tibetan Working Committee to postpone "democratic reforms" in Tibet for six years. This body's policy statement pointed out that all "Tibetan people should positively protect highways essential to national defense."

The Khamba people have a history of having fought both for and against Tibetans, Chinese Nationalists, and Chinese Communists. A British missionary who worked among the Khambas before escaping to India believed the Rangdo brothers to be sincere Khamba Nationalists who desired autonomy from both the Tibetans and the Chinese.

The Khambas have waged a protracted and sporadic guerrilla war for the past eight years, and have been slowly pushed westward by the Chinese from the Kham-Western Sikang area toward less desirable lands. As early as 1955, the Peiping Government started to transport young Chinese pioneers to "borderland" areas to set up colonies. Large numbers of Chinese have been moved into the Kham region in the hopes of displacing these troublesome peoples. By midyear 1958, a policy of dis-

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placement was superseded by a policy of extermination. On 20 July 1958, *Kalpani*, an influential Nepalese newspaper published in Katmandu, reported large numbers of Khamba people entering Nepalese territory. Eastern Nepal is about 900 road miles from the focus of past Khamba guerrilla activity. Little credence, therefore, was given at the time to these initial reports of Khambas fleeing the long distance to Nepal. A severely harassed people would presumably escape southwest across the Assam or Bhutan borders.

Exodus From Kham

The Khamba exodus has continued to the present. By last December, "fairly large numbers" were crossing the Himalayan snows and entering the Nepalese border district of Sola Khumbu, an area inhabited by the Sharpa people of Mount Everest fame. It is significant that the Nepalese Sharpa peoples claim Kham as their traditional homeland and place of origin. In the Tibetan language, Sharpa means "people of the East." Of the 10 tribes which constitute the Sharpa peoples of Nepal, one tribe still is called Khambadje. This ethnic affinity, in part, would account for the Khambas' long march westward to Nepal rather than directly south to the closer borders of Upper Assam and Bhutan. The Nepalese Government, by way of apology to the Chinese Communist Government, claimed that it is impossible to maintain winter frontier checkposts in the areas where the Khambas are said to be entering Nepal.

Total estimates of dead and wounded resulting from past Khamba-Chinese clashes have been placed as high as 65,000. By the first of this year, Chinese Nationalist intelligence sources stated that Tibetan borderland slaughters "surpass the 1956 Hungarian revolt in intensity." Fighting had occurred in the Mongolian People's Republic and along the Sinkiang-Tibet frontier in the northwest as well. Indian authorities affirmed that there was a wide-scale Khamba activity but rejected the contention that this activity was comparable to Hungary. New Delhi publicly considered Taipeh reports "to be products of wishful thinking by Chinese Nationalists" —until serious fighting erupted in Lhasa and world attention was drawn to this sensitive area.

Nationalist Intelligence

It is difficult to evaluate the magnitude and reliability of the Chinese Nationalist intelligence organization in Tibet. The Dalai Lama, before his escape to India, had spoken of the work of the "secret agents of the Chiang Kai-shek clique" within Tibet. Chou En-lai, during his third visit to New Delhi, reportedly spoke with Mr. Nehru about Kalimpong being used as "an international base" for subversion against Tibet. When asked either to affirm or deny rumors of this talk, Chou En-lai stated cryptically: "There is such information." Kalimpong's permanent population is about 15,000, composed of 3,000 Tibetans, 5,000 Chinese, and 7,000 Sikkimese, Bhutanese, and Nepalese. After the Lhasa uprising, Nehru stated that he had been informed by a "knowledgeable person" that there were "more spies in Kalimpong than the rest of the inhabitants." The Indian Prime Minister was quick to deny, however, that Kalimpong was the "command center of the Tibetan rebellion."

The foundation of the Chinese Nationalist intelligence net in Tibet was established in all likelihood by no less a person than the younger brother of the Dalai Lama, Gyalo Thondup. Thondup, who had attended the Whampoa Military Academy and served as an officer in the Chinese Nationalist Army, left India for Taiwan during May 1950. He spent over a year as a guest of Chiang Kai-shek at Taipeh before moving on to Tokyo. Throughout Mr. Nehru's trip to and from Bhutan, there were reports of Chinese Communist troop mobilization along sections of the Tibetan border. The Prime Minister scoffed

at reports that the Communist troops were present to prevent his being kidnapped. It is not unlikely that Chinese troop elements were busily engaged in interdicting Khambas seeking a southern asylum. Significantly, Gyalo Thondup was reported to be in Kalímpong prior to the Lhasa uprising.

Any military countermeasures which the Indian Government might have been preparing prior to the Lhasa revolt were screened carefully by New Delhi. It was clear, nevertheless, that such activities as military reconnaissance were taking place. The Chinese Government protested to the Indian authorities on several occasions that Indian military aircraft had "violated their territory." Shortly after Mr. Nehru's trip to Bhutan, two Indian Air Force jets failed to return from a mission over the Himalayas. Mr Nehru explained to members of the Lok Sabha's informal consultative committee on foreign affairs that it was thought that these jets had "crashed accidentally." Since mid-March the Indian Army has been sending reinforcements to the Himalayan frontier and Nehru has held talks with King Mahendra of Nepal. The Indian Government apparently is preparing for whatever might develop.

China and the Upper Assam Line

Indian statesmen are especially apprehensive of the fact that Chinese Communist maps continue to show India's northeastern frontier, a block of about 33,000 square miles in Upper Assam, inside Chinese territory. These maps also show portions of Nepal, Sikkim, and Bhutan under Chinese jurisdiction. In 1951 the Indian Government first officially acknowledged the existence of these maps, which were filtering into India through Kalimpong. Mr. Nehru, however, was careful not to challenge Peiping. He assured the Indian people, in a press conference, that the Chinese merely were using old maps. "We were told by the Chinese Government not to pay the slightest attention to these maps." The Peiping Government, according to Nehru, had not updated old atlases because it was "much too busy doing other things." Presumably, the maps in question were similar to the series contained in the *New Atlas of China*, first published in Shanghai in July 1948.

Two years after the Chinese Government had given assurances to the Indian Government, the Chinese Communists published a new series of maps entitled, *The Atlas of Chinese People's Republic 1953*. This time the Indians assumed that the Chinese now were using old map plates, for Upper Assam was once again included within the Chinese frontier. This was an optimistic assumption, for a detailed examination of contingent areas indicated that some remarkable cartographical changes had been made. Prior to 1953 some Chinese maps showed all the Pamirs as part of China. This was corrected in 1953, and Chinese maps were brought into conformity with Soviet maps of this area. The Chinese had withdrawn their claim to all but the eastern fringes of the highlands. To underscore the Chinese claim to Upper Assam, these new maps showed a border adjustment on the other side of India. The Chinese relinquished part of their claim to the tip of northern Burma, including the Hukawng valley and the upper tributaries of the Chindwin river. Significantly, the Soviet *Atlas Mira*, published under the imprimatur of the Soviet Ministry of Internal Affairs (*MVD*) in 1954, reaffirmed the Chinese claim to Upper Assam. The Russians obviously were not using old Chinese map plates.

Regarding Upper Assam, it is difficult to determine why the Chinese waited from 1953 to November 1958 to broach a subject directly which they had begun to hint at as early as 1951. One month after Mr. Nehru's return from Bhutan, the Peiping Government officially proposed to the Indian Government that "a redrawing of the two countries' boundaries after surveys

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and talks with neighboring countries" be undertaken. Officials in New Delhi stated on 2 December that India's international border is well-known and "will not be subject to negotiations." This statement was tempered by an Indian assurance that minor border adjustments will always be open to consideration and negotiation. The precedent for minor border adjustments was established in 1950 when India retroceded a small parcel of land from the southeastern corner of Jammu to Western Tibetan jurisdiction.

The Chinese Communist Claims

The Peiping Government is a signatory to the "Panch Shila" agreement of 1954, which guarantees, among other things, the principle of "mutual respect for each other's territorial integrity and sovereignty." Are the Chinese Communists, by raising the question of India's border, making an "aggressive request" for Indian territory and thus contravening a cardinal principle contained in the Sino-Indian Treaty? In the light of China's first "public" request for a general delimitation and demarcation of the Sino-Indian boundary, a reexamination of several Himalayan boundary documents may give some insight into Chinese thinking.

In October 1913, under pressure of the British Indian Government, a tripartite conference was convened at Simla to discuss boundary questions. These talks among India, Tibet, and the Chinese Republic broke down "on one point only," namely the establishment of a boundary between China and Tibet.

Secret Accord

It is not generally realized that, during the course of these talks, a secret boundary agreement was negotiated between the Lhasa authorities and the British. The Tibetan Government agreed to a British proposal for delimitation of their southern boundary with India. The *quid pro quo* was a promise of British support against the Chinese. Thus it was that in early February 1914 the Tibeto-Indian frontier was fixed to run from "Isu Razi Pass to the Bhutan boundary."

Two maps were exchanged showing the boundary marked in red; these maps have never been made public. Isu Razi La derives its name from Pomtang Razi, a 15,151-foot peak in the Kachin State of North Burma. It is located southeast of Rima, midway between the Taron Wang valley and the Alang Chi. The British, by fixing the boundary on the point of Isu Razi La, realized that a line drawn due north from this point would coincide with the upper reaches of the Yangtze River at Tengko. From the standpoint of a prominent natural terrain feature, the Yangtze River would be considered the maximal Chinese boundary between Outer and Inner Tibet acceptable to the British. Thus Chinese influence would be excluded from all of Upper Assam and India's northeastern frontier would be secured.

The British representative, Sir Henry McMahon, having attained his main objective, was prepared to concede minor points to the Tibetans to assure the ratification of this secret boundary document. Any private Tibetan estates falling on the Indian side of the frontier were to remain undisturbed. If the sacred places of "Tso Karpo and Tsari Sarpa" were within a day's march of the boundary, modifications in favor of Tibet would be undertaken. The Tibetans had some misgivings, for they raised the issue of "whether certain dues now collected by the Tibetan Government at Tsona Jong and in Kongbu and Kham from the Monpas and Lopas" were to be continued. McMahon stated that his advisor, Charles Bell, would work out any remaining details with them "in a friendly spirit." Mr. Bell had earned the trust of the Lhasa authorities. He spent three months prior to the opening of the Simla conference working with the Tibetan representative, Lon-chen Shatra, at Gyantse,

preparing Tibetan legal briefs to be used against Chinese claims.

The secret Tibeto-Indian accord was ratified by the Lhasa authorities on 25 March 1914. Assured of friendly cooperation on their southern border, the Tibetans returned to their prime objective of pushing the Chinese boundary as far east as possible. They claimed that Tibet's eastern boundary should run through Kangting (Tatsienlu). On 27 March, two days after the Tibetan authorities ratified the document and maps marking Tibet's southern frontier, the British delegate declared that the "general debates should come to a close." The Chinese representative, Mr. Ivan Chen, continued to press for a boundary line running through Giamda, a few stages east of Lhasa. This would place the Chinese within striking distance of the Tibetan capital and would extend a Chinese-controlled southern border over more than half of eastern Upper Assam.

The Simla Convention

At this point Sir Henry McMahon suggested a "compromise" solution to the boundary problem. Tibet would be divided into "Inner" and "Outer" portions. The whole of Tibet would be recognized as being under Chinese suzerainty, but the Chinese were to accord autonomy to Outer Tibet. The British were using the precedent of the Russo-Chinese accord signed on 5 November 1913 in which Russia recognized Chinese "suzerainty" over Outer Mongolia while China agreed to accept Outer Mongolian "autonomy." The eastern boundary of Outer Tibet was to be established along the line of the 1727 frontier. This agreement, known as the Simla Convention of 1914, although initialed by Mr. Chen, was never ratified by the Chinese Republic. Therefore, the northeastern boundary of India can only be said to rest on a dubious exchange of notes between British India and the Tibetan authorities.

The Simla Convention sometimes is pointed to as establishing the current Sino-Indian boundary. This, of course, is incorrect in the eyes of the Peiping Government. Nor does Peiping consider itself bound by the notes and maps exchanged between British India and Tibet. Under the terms of the Anglo-Russian Convention of 1907, the British agreed that, "in conformity with the admitted principle of the suzerainty of China over Tibet, Great Britain and Russia agree not to enter into negotiations with Tibet except through the intermediary of the Chinese Government." The British secretly broke this treaty when they negotiated directly with Tibetan authorities to establish an Indo-Tibetan frontier.

Recognizing the illegality of their action, the British concurrently opened negotiations with Russia in the hopes of revising the Anglo-Russian convention of 1907. To screen Indo-British Himalayan developments, the British Ambassador at St. Petersburg sent an *aide-memoire* to the Russian Foreign Ministry. The note pointed out that the Russian-Mongolian protocol gave "no special privileges to Russian goods" and suggested that, "with a view to concluding an arrangement for securing fair terms and the maintenance of an open door for the British trade," the Russian Government might care to enter into a new treaty. The presence of Russia in Mongolia and of Britain in Tibet were linked by the Anglo-Russian agreement of 1907. The British hoped, by raising the problem of trade in Mongolia, to obtain a revision of a treaty that bound their hands in dealing directly with Tibet. Since there was little or no British trade with Mongolia at this time, the British obviously were willing to agree to give up something they did not have in return for a right to deal with Tibet without China as the middleman.

Old Agreements Refuted

Any document signed by a Chinese Government, past or present, with the Lhasa authorities is, in the view of Peiping,

purely an "internal" matter. This line of reasoning was made amply clear during an exchange of notes between the Indian and Chinese Governments in 1950 when the question of the status of Tibet arose. This was further underscored on 23 May 1951 when the Chinese Communists signed an agreement with the "local government" of Tibet, which completed the "peaceful liberation" of the country. Article 14 of this agreement is significant because it contains the genesis of the Panch Shila agreement, later signed by India in April 1954:

There will be peaceful coexistence with neighboring countries and establishment and development of fair commercial and trading relations with them on the basis of equality, mutual benefit, and mutual respect for territory and sovereignty.

In the eyes of the Chinese the Sino-Indian agreement reaffirms that any exchanges between the Tibetan authorities and the British-Indian Government have been illegal and, therefore, nonexistent. Mao Tse-tung merely bent to pick up the reins of Tibetan "suzerainty" which a Manchu emperor had dropped 43 years before.

From the point of view of the Chinese Communist Government, the only delimitation of the Sino-Indian boundary that has force of law was provisionally laid down in the Panch Shila agreement of 1954. Article IV states:

Traders and pilgrims of both countries may travel by the following passes and route:

Shipki La, Mana Pass, Niti Pass, Kungri Bingri Pass, Darma Pass, and Lipu Laku Pass.

Therefore, the only Himalayan boundary recognized by the Chinese Communist Government runs from the southeast corner of Jammu to the northwest boundary of Nepal. The northern boundaries of Nepal, Sikkim, Bhutan, and Upper Assam still are to be negotiated. China has made this amply clear in her request of November 1958 for the redrawing of the two countries' boundaries after surveys and talks with neighboring countries.

India's Diplomacy

If India's foreign policies seem to exhibit certain puzzling tendencies to the West, it is well to remember that India is experiencing pressures along every point of her land frontier. Indian statesmen matured during a period when all political activity was directed inward toward the struggle for independence. They are not accustomed to long-range thinking in terms of external boundaries. The Indian Government still is dealing with small sub-Himalayan states within the well-known format of the 18th century British raj.

Acharya Kripalani, a leading Indian socialist, charged that "Panch Shila was born in sin." The Indian Government, in his eyes, was guilty of hyprocrisy when it enunciated high-sounding principles at the same time that it acquiesced in the emasculation of Tibet by China. He might better have said Panch Shila was born in "folly," for Indian acceptance of Communist China's presence in Tibet has opened up the entire problem of India's northern frontier. The smoldering rebellion in Lhasa, the Tibetan capital, has only served to underscore India's vulnerability along the Himalayas.

In small, localized, or limited wars, our country, if called upon by appropriate international authority or the nation concerned, must be able to snuff out the spark before it becomes a holocaust. This means we must be able to move strategic Army forces to any trouble spot in a hurry.

General Bruce C. Clarke

Central Asia--Melting Pot of the World of Tomorrow

Translated and digested by the MILITARY REVIEW from a copyrighted article by René Grandchamp, in "Revue Militaire d'Information" (France) June 1959.

LAST March in the heart of Asia a drama was enacted in which Tibet was the theater. This drama has shaken the confidence that the underdeveloped peoples had in China. Mr. Chou En-lai has lost "on the top of the world" part of what he had gained at Bandung. Communist imperialism has been unmasked as far as the Asiatic world is concerned.

The USSR actually has never ceased to be interested in Tibet, and since 1940 Communist "propaganda" Lamas constantly have been leaving the Autonomous Soviet Socialist Republic of Buryat-Mongol to go to Lhasa. (Buryat-Mongol Republic is an Autonomous Soviet Socialist Republic near Lake Baikal.) These Buryats, of Buddhist affiliation and related to the Tibetan race, are educated in Marxist universities such as the one at Tashkent.

Ulan Ude, the capital of the Buryat Republic, is connected by railroad with Ulan Bator, which is the capital of Outer Mongolia. In these regions, which are close to China, the Russians defend their influence very energetically. The purge of the party leadership of the Communist revolution of Mongolia which was carried out during the Central Committee session in March 1959 is proof thereof.

Purge in Mongolia

The beginning of this purge goes back to November 1958. At that time, Mr. Dordj Damba, the party leader, was reduced in rank and given the post of Second Secretary. Two secretaries of the Central Committee, Mr. Suronjab (the ex-president of Parliament) and Mr. Damdin, were relieved of their functions. Mr. Yumzhagin Tsedenbal, age 42, and known for his pro-Soviet leanings, was named party chief and head of the government. It was at that point that there was talk about rivalry between Peiping and Moscow with regard to their respective influence in Mongolia and it was said that Peiping was prepared to lend support to Mr. Molotov, leader of the "antiparty" line, who had been exiled to Mongolia in 1957.

Among those purged from the Central Committee of the Mongolian Communist Party was a Mr. Lantchine. On 6 November 1958—just prior to the first falling into disfavor of Mr. Dordj Damba—Mr. Lantchine and Mr. Molotov had made speeches in Ulan Bator which were indicative of their personal leanings with regard to the perspectives of the Socialist camp. Having been passed over in complete silence at Moscow, their remarks were, on the contrary, made much of by the Chinese press in Peiping.

Mr. Damba's purge and that of his colleagues had been decided as a result of a report by Mr. Tsedenbal, the First Secretary of the party, entitled: "Conclusions to Be Drawn for the Mongolian Revolutionary Party of the 21st Communist Party Congress of the USSR." The Congress of Moscow—apart from its economic aspect—was noteworthy for its violent and definite condemnation of the antiparty group of Mr. Molotov and Mr. Malenkov on the political plan.

Thus the new purge within the Mongolian Communist Party could be interpreted as a complete alignment on the part of the leaders in Ulan Bator with the politics of the Kremlin.

Sinkiang: a Strange Region

Affairs in Mongolia bring to mind the situation in Sinkiang (or Chinese Turkistan) which is isolated from Central China by the Gobi Desert and is a neigh-

bor of Outer Mongolia in the northeast, of Tibet and Kashmir in the south, and the Soviet Union in the northwest and west. The importance of that region—internationally speaking—has been pointed out on various occasions. As early as 1946 Mr. Renouvin wrote in his work: *The Far Eastern Question*: "Is Sinkiang fated to become a buffer state between China and the USSR, or will it be absorbed by the Soviet Union?"

Two-thirds of Sinkiang's five million inhabitants are composed of Turkmen who —with the Tungus, Kirghiz, Uzbek, and Tartar nomadic tribes—are orthodox Moslems. The Chinese represent no more than 10 to 12 percent of the total population. These are officials and businessmen who are swallowed up in the compact group which constitutes an ethnically foreign element to the rest of China.

Sinkiang has known an era of fame thanks to the Venetian expeditions and to Marco Polo as part of the "Road of Silk." Germany cherished the hope of establishing airlines and even railway communications across Afghanistan into Sinkiang. Sinkiang is twice the size of France and is divided into two parts as follows: Dzungaria in the north and Kashgar in the south and separated by the Tien Shan, which serves as a "backbone" of more than 3,000 kilometers from east to west and whose ridge attains 7,000 meters in places. Urumchi, its capital, has a population of 150,000 and is situated on the road that crosses through the Altai Mountains and leads to the Balkhash Lake in the USSR. It is the road coming from China.

Mineral Wealth

Sinkiang's wealth is in its subsoil. In 1913 the Russian consul, Mr. Sokov, wrote a report to Moscow which recognized the mineral wealth of the area.

He wrote:

Among the minerals here, there are mainly gold, silver, copper, lead, iron ore, sulphur, and coal. . . . There is also naphtha in great quantity . . . it can be said without exaggeration that there are vast mineral resources and that it would be possible to extract from the subsoil such wealth as would amaze the world.

The methodical drillings that have been undertaken in recent years have confirmed these views. The gold deposits are among the richest in the world, and if a Chinese mission which conducted minute prospecting in the country in 1944 is to be accorded credence, there also are vast uranium deposits . . . and "sticky weeds" from which rubber can be derived.

It is understandable that these riches have caused international covetousness. Sinkiang is a richly endowed land that is, nevertheless, behind the times. Her economy is weak and the sparsity of the population appears to make her rather easy prey.

The USSR's Interest

Since the time when the conquest of Caspian Turkistan brought Russia to the borders of Chinese Turkistan, incessant rivalries such as the English, the Russians the Chinese, and even the United States have opposed one another in this area. Today, China justifiably considers Sinkiang to be an integral element in her economic structure. It must not be forgotten, however, that the towns of this province are only a few hundred kilometers removed from the Russian Turkistan markets. These markets include the areas of Turkmenistan, Uzbekistan, the old khanate of Kiwa and Tadzhikistan, and the old khanate of Bukhara. On the other hand, Sinkiang is 2,000 kilometers away from the great Chinese centers of trade and commerce.

The USSR never has contested the Chinese sovereignty over Sinkiang, but she has not been indifferent to the efforts of some other powers that might have attempted to take China's place in Sinkiang. Furthermore, the native Turkmen have

turned their eyes historically to the Soviet frontier. "We have never been part of the Chinese civilization," they say, "we have always struggled for independence. We are part of the vast community of Turkish races that are scattered all over Central Asia from Istanbul to the Gobi Desert."

According to reliable information, it would appear that, today, Sinkiang constitutes an excellent nuclear proving ground for the Soviet Union and that it will be used by the Chinese for this purpose in the near future. Four research centers are supposed to have been established in the country. These are under the direction of the Italian scientist, Pontecorvo, who has spent a number of years at Urumchi.

Regional Nationalism

On the internal aspect a special session of the Committee of the Chinese Communist Party of the Autonomous Region of the Uighurs of Sinkiang was held 18 months ago. Its purpose was to discuss the problem relative to development among the ethnical minorities of a "corrective campaign," and an "anti-Rightist" struggle of which the main theme is contained in the criticism of "regional nationalism." Saifudin, Secretary of the Party Committee of the Autonomous Region and President of the Popular Government of the Autonomous Region of the Uighurs of Sinkiang, presented a report entitled: "Do We Firmly Oppose a Regional Nationalism in Order to Fight for the Great Victory of Socialism?"

This report was couched in the following terms:

In the course of the past eight years the region of Sinkiang has achieved great success in all fields, which is a testimony to the constant attention accorded by the regional Party Committee to the prevention of chauvinistic thinking of the Great Han, the governing body of officials in Peiping. However, in the course of recent years and, particularly, since the frenzied attack of Rightist elements against the party last spring, nationalistic tendencies of a serious nature have been uncovered. At a time when regional nationalism stands out, it is necessary to concentrate all efforts toward opposing this regional nationalism and to counterattack the Right by appropriate means. If we do not succeed to overcome nationalism, the national unity will be undermined, the fruits of the Socialist Revolution put into jeopardy, and Socialist structures handicapped.

. . .regional Nationalists have neglected or even forgotten the revolutionary interests of the working class and that of the international Communist movement by putting their nationalistic aspirations before the others. They are not interested in the question of realizing the present revolutionary task, but try to create trouble with respect to the pretended 'problem of nationalities.' . . . Having become agents of imperialism they certainly will be repudiated by all the people.

This report is of obvious interest: When Saifudin recalls that the Communist Party makes it a point constantly to prevent "the chauvinistic tendencies of the Great Han," he blames the superiority that the Chinese display in their dealings with the Tibetans. And at the conclusion of his—pessimistic but loyal—report, Saifudin repeated: "While it is necessary to be opposed to regional nationalism, it is no less necessary to put up opposition against the chauvinistic spirit of the Great Han."

Thus the difficulties that the Peiping Government may have in keeping the faraway provinces "in step" are shown.

Soviet Central Asia

Fortunately, communism cannot always win. The Communists, who are used to dialectics as a rule, were not surprised to see their successes arouse antagonistic forces. "The state capitalism of the national *bourgeoisie* of Mr. Nehru and Mr. Sukarno, for instance, is preferable to

Western capitalism." This was said by Mr. Gafourov, the Chief of Asiatic Studies in the USSR, in 1957. He added, however, that it would be absurd to believe that under the leadership of the *bourgeoisie* a basis could be established for the transition to socialism. This is true because the national *bourgeoisie* would never permit the establishment of a "popular democracy" or the final transition to communism.

If the Indian Communist Party should continue to progress, Mr. Nehru would worry. The Kremlin knows of these difficulties, but it is convinced that time works in its favor. The national governments of the underdeveloped countries will, they say, be incapable of resolving their economic and social problems. The Soviet Republics of Central Asia have been the best experimental terrain imaginable for these matters for the government of Moscow.

Ethnic and Economic Ties

Uzbekistan, Kirghizie, Tadzhikistan, and Turkmenistan represent vast colonial possessions of Soviet Russia and the majority of the population is Moslem. There are in all, about 25 million Moslems in the USSR distributed in three regions: that of the Volga and the Urals which were conquered by Ivan the Terrible in the 16th century; the Caucasus which was acquired in the first half of the 19th century; and Central Asia whose conquest was begun by Alexander II in the 19th century and which was achieved by the Communists in 1921. It is a fact that there are more Turks in the Soviet Union than there are in Turkey, and more Moslems than there are in the United Arabian Republics.

The "reconquest" by the Soviets of the oriental border provinces of the old Russian Empire, the greater part of which had seceded in 1918 at the time of the Civil War, was made easier by the loyalty of the Russian segment of the population of those regions. The Russians—merchants, officials, soldiers, workers, and peasants—having for centuries enjoyed being a privileged group, preferred a Communist regime—but dominated by Russians—to a democratic rule that would be dominated by the indigenous elements.

The Soviet Republics of Central Asia cover 1.2 million square kilometers from the Caspian Sea to the Chinese border. Under the Soviet regime they have experienced an extraordinary degree of economic and cultural development. The industrial production is 40 times more than in 1939. However, it must not be forgotten that in the interval, craftsmanship has practically disappeared and industry has taken its place. Agriculture still is the basis of Central Asia's economy, particularly the production of cotton which the USSR strives to develop because it is the most advantageous to her interests.

Cotton Production

Indeed, in Central Asia, agriculture is very different than that in the Soviet Union. For centuries the irrigated soil has been almost exclusively consecrated to the growing of cotton, rice, and of mulberry for the production of silk. Stockbreeding and the raising of sheep and goats is limited to the mountainous or semidesert regions.

Central Asia, whose cultivated soil barely amounts to three percent of the cultivated area of the Soviet Union, is, therefore, extremely important as the supplier of raw materials including cotton, silk, and wool for the Soviet textile industry. The interest of the USSR is focused mainly on long fibered cotton. As a result of unceasing efforts, the cotton yield has become comparable to that of Egypt. Right now the production per acre is five times that attained before the revolution.

At present, Central Asia delivers 85 percent of its cotton to the Soviet Union for use in Russia. This figure emphasizes how artificial the outlets are for Egyptian cotton in the USSR and in the satellite countries.

The Spread of Communism

The spreading of communism in Central Asia was held back at first by the Islam, but starting with 1948 it became accelerated. The Moslem clergy who have had the benefit of many privileges now seem to be devoted to the regime. The geographical limits of the state in those regions do not coincide with the ethnical demarcations. This is an important point because in Afghanistan there exist strong Uzbek, Tajik, and Turkmen minorities which, in the future, are likely to resent the attractive power of their ethnical parents in the neighboring Soviet Republics.

The fall of Czarist Russia has not freed Afghanistan from the fear of aggression from the north. Communism can easily cross the Amu Darya River and defy the political and economic structure of Afghanistan. The threat is not directed solely against the Afghans. Kashmir is just as much exposed to communism as is the Kabul Valley and can be used as a practical route of access by the Communists of Central Asia or by China.

Tractors from Red China in Sinkiang

Uncertainties and Threats

Kiai-Fang-Je-Pao, one of the principal Chinese newspapers, stated on 6 August 1950:

When the army of liberation will enter Tibet, it will respect the morals and customs of the people. Education and instruction will be developed. The political and military system now in force in Tibet will

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be maintained. Reforms will be effected only in accordance with the wishes of the Tibetan people and after consulting with the people and the leaders in Tibet.

At that time reliable information had it that once Tibet was conquered, the Chinese Communists would aim at Ladakh, a Buddhist province of Kashmir. This province borders on Tibet; it is often called "small Tibet," since its border and that of Tibet have remained undefined. An infiltration in Ladakh would extend rapidly toward India. Ten years ago New Delhi considered the two principal pillars of its defense to be an autonomous and peaceful Tibet in the north and a stable and friendly Nepal. An old adage says: "He who holds Tibet holds all of Asia." Today, Tibet is conquered and Nepal has organized Communist cells in its midst.

Sino-Soviet Strategy

In the face of these perspectives one question comes to mind. Is there a common Sino-Soviet strategy for Asia?

As far as doctrine is concerned, Mao Tse-tung speaks of socialism and means socialism of the state, which has been a well-known idea to the Chinese since the era of the "wandering philosophers," toward the end of the Chou dynasty. At the time of the Sung dynasty a scholar by the name of Wang An-shih developed this theory to the Emperor Shen Tsung (1068-85) who accepted it. The experiment (based on five-year plans) lasted 17 years and failed only because of the passive resistance of the peasants.

If Mao Tse-tung uses the word "revolution," he does so to please the young Chinese. He always practices the methods of "evolution" in the historical sense of the word. Professor Maximilian Esterer says with good reason that "the generation is the unit of measure of Chinese thinking," while the Western World does not know how to "think in generations." The Chinese have not forgotten the wars that have been waged against them.

In order to understand as well as possible the foreign affairs politics of Communist China, it is necessary to recall the common program which was adopted on the occasion of the meetings of the popular political advisory conference of September 1949. Three elements form these politics: first, China believes in the struggle of world communism and in the inevitable course of world history; second, Asia is to be the object of a crusade; and last, foreign affairs politics must tie in closely with national interests.

To understand the foreign affairs politics of the Soviet Union it must be recalled that Lenin declared:

We will do our utmost to bring about a closer relationship and a union with the Mongolians, the Persians, the Indians, and the Egyptians. We consider it to be our duty and to our advantage to do so because otherwise, socialism (communism) in Europe would lack stability.

Conclusions

Once China is restored, she is destined to become a gigantic airfield which would be to Asia what the famous quadrilateral of Bohemia was to Europe of 1900. Then China can assume the strategic leadership of the Asiatic revolution in the southern and southeastern direction. But why would China cease to work in close accord with the Soviet Union who directs her efforts toward the Middle East? Both are solidly established in their formidable bastions of Central Asia.

BOOKS OF INTEREST TO THE MILITARY READER

SOURCES OF OUR LIBERTIES. Documentary Origins of Individual Liberties in the United States Constitution and Bill of Rights. Edited by Richard L. Perry. Under the General Supervision of John C. Cooper. 456 Pages. American Bar Foundation. New York University Press, New York. $5.00.

BY CAPT JOHN F. HUNT, *Inf*

The stated purpose of this book is "to present in a single usable volume the historic documents constituting the major legal sources of our individual liberties." Chosen to meet this purpose were 31 documents ranging from the Magna Charta to the Constitution of the United States.

Supplemental data to include the first 10 Amendments to the Constitution, and subsequent amendments through Article XXII complete the sources. In the end analysis this compilation delineates the fundamentals which form the basis for our national policy.

Each document is preceded by an introductory editorial note on its political background, its effectiveness in its own time in meeting the problem which it sought to solve, and its ultimate influence in the final establishment of our liberties. These explanatory notes are free of ponderous legal terminology which might confuse or cause loss of interest to the nonbarrister.

Within each editorial note and document attention is focalized on key phraseology by means of pertinent marginal notations. This enhances readability and facilitates reference. The marked difference in prose style between the documents and contemporary usage is semantically stimulating.

As a "citizens' bible" listing and explaining the foundations of our national political philosophy, *Sources of Our Liberties* is recommended reading.

BATTLE. The Story of the Bulge. By John Toland. 400 Pages. Random House, Inc., New York. $5.00.

BY MAJ EDWIN J. MCCARREN, *Armor*

This book deals exclusively with the Battle of the Bulge. Initially, the author sets the stage by recounting the events that led up to the dispositions of the US units in the Ardennes area on 15 December 1944. He then recounts the actions of Hitler and the German High Command in planning the offensive and effecting the concentration of the German forces. Simultaneously, he describes briefly the personalities and backgrounds of selected key commanders on both sides.

With this setting the German offensive is launched and the author follows the hour by hour progress of selected Allied and German units from platoon to field army size. In spite of the magnitude of the project, continuity is maintained and individual actions are portrayed vividly.

This book was based to a considerable degree on hundreds of personal interviews with American and German participants and with civilians who lived in the area during the "bulge." Allowing for inaccuracies in memory and differences in outlook and attitude of individuals at various levels of command, the book is well-done, makes interesting reading, and serves as an excellent reference.

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THE ST. LAWRENCE SEAWAY. By T. L. Hills. 152 Pages. Frederick A. Praeger, Inc., New York. $3.50.

BY CAPT JAMES H. BUCK, *Inf*

Truly magnificent both in conception and creation, the St. Lawrence Seaway, opened in April 1959, is an arresting example of the fruits of international cooperation.

Mr. Hills, who is Associate Professor of Geography at McGill University, has written a well-balanced and entertaining presentation of the geographic, historical, economic, and political considerations which have either facilitated or impeded the execution of this great engineering feat.

Although portions of his book related to the geography of the area are tedious, Hills' narration of its history is rewarding and covers the four centuries from the fish and furs of De Champlain and La Salle to the electric power and Quebec-Labrador iron discoveries of this generation.

For decades there have existed cogent reasons for the construction of the Seaway. Mr. Hills is at his best when he employs his considerable powers of analysis to describe the interaction of various pressure groups and lobbies which successfully blocked the Seaway for half a century.

The strategic implications of the Seaway construction are of more than passing importance to the professional military officer. Deep-water shipping of all nations now has access to the Great Lakes Basin and to the heart of the North American manufacturing belt.

In this area lies the greatest industrial complex in the world, and in the states bordering the Great Lakes live 70 million Americans. On the northern side of the Seaway and the Great Lakes is concentrated 60 percent of Canada's population.

Further development of this entire area will be watched closely throughout the world and the military officer should be acquainted with the basic facts of the Seaway's conception and creation. Mr. Hills' short volume is an excellent key to this understanding.

THAILAND. An Introduction to Modern Siam. By Noel F. Busch. 166 Pages. D. Van Nostrand Co., Inc., Princeton, N. J. $3.50.

This book is a brief comprehensive account of modern Thailand, her origins, people, and recent history. Current affairs, arts, and culture come in for a fair share of the discussion. Written by a competent author and editor who lived for four years in the country, the volume is credible and is considered a valuable background source of information on the country.

CUSTOMS AND CULTURE OF OKINAWA. (Revised Edition.) Compiled by Gladys Zabilka. 200 Pages. Charles E. Tuttle Co., Rutland, Vermont. $2.75.

This book is a general work presenting a brief concise history of Okinawa, its peoples, customs, and institutions. It is of value to the individual contemplating travel or a tour of military duty in this island country.

CONCISE DICTIONARY OF SCIENCE. By Frank Gaynor. 546 Pages. The Philosophical Library, Inc., New York. $10.00.

This book is a complete dictionary of concise definitions pertaining to all fields of science.

ESSENTIALS OF MILITARY TRAINING. 536 Pages. The Stackpole Co., Harrisburg, Pa. $6.50.

Here is a basic military training text suitable for use at the company and platoon level and by Reserve Officers' Training Corps units. This volume contains much material taken directly from basic field manuals. Individual weapons training, to include the *M14* rifle and the *M60* machinegun, is included.

ROAD TO REVOLUTION. By Avrahm Yarmolinsky. 369 Pages. The Macmillan Co., New York. $5.95.

BY LT COL HAROLD E. BEATY, *CE*

The daily impact of Russia's political influence is felt throughout the world. In the past four decades there have been radical changes politicalwise within this nation. In order to understand these changes, it is important that the student of political science devote a considerable amount of time to research into the political developments in Russia, particularly prior to 1917.

Dr. Yarmolinsky has set forth in an interesting and readable manner Russian political history during the period May 1790 to the great famine of 1891-92, thus giving the student as well as the general reader an excellent sample of history.

Here is a rare story of those men and women of the 19th century who had the moral and physical courage to revolt against the order established by the czars and other leaders. In May 1790 Alexander Radishchev, in a publication which exposed the corruption and cruelty of the regime of the Empress Catherine, went so far as to suggest that Russia abolish the throne. Since this writing followed closely after the French Revolution, there was much anxiety among the Russian court. This daring work set the example from which numerous secret societies formed and functioned.

It is interesting to note that the efforts among the many secret societies were not coordinated, thereby having little effect upon the Russian ruling class other than harassment. Since they were not too well-organized, the persons involved frequently found themselves at the mercy of the state police.

The author has presented a prologue to the Russian Revolution. He skillfully chronicles the Russian revolutionary tradition, has stayed strictly with the revolutionary characters, and has avoided presenting details of the opposing forces. Emphasis is placed upon the clandestine activities, whether executed or merely planned, whether they took the form of peaceful propaganda or political assassination.

The reader gains an excellent perspective of the stark drama which existed in Russia during this period and will have a clearer understanding as to the struggles which eventually caused the revolution which began in 1917.

ARMOR COMMAND. By Brigadier General Paul McDonald Robinett, Retired. 252 Pages. The US Armor Association, Washington, D. C. $3.95.

BY MAJ HOWARD H. BRAUNSTEIN, *Armor*

The trials and tribulations encountered by our tactical commanders who were the first to meet the German forces in combat are related in detail by an author who was there. Written from operational orders, unit histories, and personal interviews with participants, General Robinett, a keen historical student and author, does much to fill in some of the gaps of this early period of World War II.

"American military literature is replete with the personal accounts of high ranking commanders, but a great void exists in all the lower ranks," writes General Robinett in the foreword—"this piece will be one more to help fill the void in the middle ranks."

Only such an outspoken combat leader could relate this history of the war in Tunisia, the lessons learned, and of the personalities. As commander of Combat Command B, 1st Armored Division, operating as a small independent unit of the combined arms, the author has much to contribute to the thoughts and study by military students of the modern battlefield.

Only the format of the book, the small print, and inadequate maps detract from an otherwise excellent effort.

NUCLEAR WEAPONS AND INTERNATIONAL LAW. By Nagendra Singh. 267 Pages. Frederick A. Praeger, Inc., New York. $6.75.

BY MAJ ROBERT G. MUNDINGER, *Arty*

A thorough knowledge of the rules of warfare as prescribed by international law, either customary or treaty, is a prerequisite for a military commander. This is true even though the law is ignored or violated when contrary to national interest, and its only sanctions are self-interest, world public opinion, or the courts of the victor.

This book purports to be a study of the legal application of the rules of international law to the use of nuclear weapons. The informed military reader may well disagree with the conclusions reached in the book, but he should find the basis of those conclusions worthy of consideration.

AUTOMATION, CYBERNETICS, AND SOCIETY. By F. H. George, Ph. D. 283 Pages. The Philosophical Library, Inc., New York. $12.00.

BY LT COL LEO J. HAGERTY, *USAF*

"Things are in the saddle, and ride mankind."—Emerson. Dr. George does not agree, but concedes this is a distinct possibility for the near future.

His objectives are first, the correlation of automation and the science of cybernetics (defined by him as the study of control and communications systems, in an all-inclusive sense) to planning for future everyday living.

Second, he applies this cross-cutting science to older disciplines such as logic and biology, and other more indeterminate realms, as sociology. Dr. George relates aspects of many seemingly nonkindred fields. This is, perhaps, the best recent job done in this category. Only his compartmentalized treatment of each relationship seems open to improvement.

The early chapters start out full of promise for a full discussion of man and the machine, everyday living and automation, automatic cheap production and full employment, and the struggle to retain individualism as opposed to the gray life of future masses caught in a standardized society.

The military application of this work is based on its value as a good current status report on automation philosophy. Part Two, in particular, will appeal to engineers because of its technical cohesiveness. Parts One and Three are nontechnical and contain step-by-step treatment of the subject.

MATERIALS FOR ROCKETS AND MISSILES. By Robert G. Frank and William F. Zimmerman. 124 Pages. The Macmillan Co., New York. $4.50.

BY MAJ RICHARD L. HALEY, *Arty*

The purpose of this well-synthesized book is to present typical engineering data on existing metal and ceramic materials, and to preview materials which are expected to become available during the next few years. Its content is directed to the engineer who is not familiar with materials, and is intended to provide him with a broader understanding of ceramics and of high-temperature metallurgy.

The authors feel that most work in missile and rocket research and development today, because of the always present time problem, has explored the further limits of conventional, easy-to-use materials, and that these materials are now not adequate for the workers in military and space exploration programs. New requirements will force the practical engineer into a closer working relationship with the scientist and the materials engineer, with the resultant benefit for science, industry, and the military.

This volume will be of value to those readers interested in the technical nature of rocket and missile materials.

THE DRAGON'S SEED. Peking and the Overseas Chinese. By Robert S. Elegant. 312 Pages. St. Martin's Press, Inc., New York. $4.95.

BY LT COL FRANCIS J. KELLY, *Armor*

A large Chinese commercial army, possessing tremendous economic and political power, exists in Southeast Asia. The leaders of this army are the *hua-chiao*—the Chinese sojourning abroad. The story of their accession to power, and the extent to which this power has grown, is told in a fashion as engrossing as any novel.

Behind this material façade, however, are psychological factors of resilience, political volatility, and unreasoning attachment to the ancient and prestigious culture of China, and a political pliability which stems basically from a common sense of insecurity, an overwhelming race consciousness, and a pragmatic sense of reality. Thus an adroit manipulation of these latent characteristics by a shrewd political machine could result in subsequent control of the rich natural resources of this area. The author describes in shattering detail how this commercial army is being taken over by the Communist Party of China.

Mr. Elegant obviously possesses an acute understanding of this problem and his microscopic examination of the historical causes and potential effects of this dilemma is heightened by his background association with the problem and his personal concern for the future of America in this region of the world.

The proposals to remedy this turn of events are at once wide-reaching, drastic, and not politically palatable in terms of the direction of US foreign policy today. The book fails to pursue the proposed remedies with the same devout attention to detail as is paid to the diagnosis of the problem. Notwithstanding, this book is highly readable, mentally stimulating, and a valuable research document on a knotty problem.

LINCOLN FINDS A GENERAL. Volume Five. Prelude to Chattanooga. By Kenneth P. Williams. 395 Pages. The Macmillan Co., New York. $7.50.

BY MAJ DONALD F. BLETZ, *Inf*

This is the fifth and final volume of an outstanding work on the Civil War. The late Kenneth P. Williams, a noted mathematician with a keen interest in Civil War history and an uncommon ability with the pen, published the first two volumes of the series in 1949. His untimely death prior to the completion of Volume V resulted in its publication minus its two final chapters.

The volume opens with a detailed account of Prentiss' defense of Helena, and closes with Grant in October 1863 about to commence operations for the restoration of the situation on the Cumberland.

Intermediate chapters provide excellent treatment of Banks' capture of Port Hudson, Sherman's seizure of Little Rock, and Schofield's tribulations in the stormy Department of Missouri. Rosecrans' headquarters at Murfreesboro, immediately following the battle of that name, provides the setting for Chapter VII.

In June Rosecrans commenced his move and by a series of skillful maneuvers advanced through the mountains in pursuit of his opponent. These actions, the determined counteraction taken by the Confederates, and Rosecrans' subsequent defeat at Chickamauga are covered in a most interesting manner.

Had the author lived, Volume V would have contained two additional chapters which were only in outline form at the time of his death and are discussed in some detail in the preface. These chapters would have covered the Battle of Chattanooga and Grant's trip to Washington to receive his commission as lieutenant general from the President. Volume V and the completed work then would have ended appropriately when Lincoln found his general.

CLASH OF CAVALRY. The Battle of Brandy Station. By Fairfax Downey. 238 Pages. David McKay Co., Inc., New York. $4.95.

BY MAJ ARTHUR M. CLARKE, *Arty*

The author has written a highly readable account of the rise and fall of cavalry in the Civil War. This includes the cavalry of both the North and South and indicates some of the strong points and weaknesses of each.

There actually is a great deal of background information presented in the text and in the appendices that makes for more interesting reading and valuable information for the student of cavalry. This information, including some highlights on the methods of recruiting cavalry, the training and equipping of troopers, together with indications of the relative advantages of methods used by the North and South, gives the reader an opportunity to evaluate the actual battle depicted.

Although the Battle of Brandy Station occurred on 9 June 1863, the events that built up to it, including the review held by the southern cavalry commander, General J. E. B. Stuart, for General Lee on 8 June 1863, had a great deal to do with the course of battle.

The battle was truly a clash of cavalry, for although the North and South had infantry to back them up, the infantry was not used in the battle—the battle moved so fast that the infantry marching with the Union Army did not have time to get in place, and the infantry of the South was in reserve five miles from the battle positions.

The author has vividly depicted the battle as it coursed from one front to another, up hill and down. The withdrawal of the Union forces back across the Rappahannock in the afternoon without pursuit by the Confederates leads the reader to believe that this battle ended as a draw and was perhaps the turning point in the rise and fall of cavalry.

THE THIRD WORLD WAR. Trade and Industry—The New Battleground. By Harry Welton. 330 Pages. The Philosophical Library, Inc., New York. $6.00.

BY MAJ JOSEPH L. STRELECKI, JR., *Arty*

The third world war is not to come—it is in progress now.

The medium of trade and industry, Mr. Welton contends, will replace the all-out military struggle, even one fought with the so-called conventional weapons. Such an all-out military conflict would be the product of madmen, and Khrushchev is unwilling to risk destruction of what he and his ilk have taken such pains to build.

This book is fully documented and is a critical analysis of all the measures being taken by the Communists in their attempt to control the countries of the earth by fair means or foul. It is noteworthy that most of the quotations are by leading Communists and contain many of the answers to some of our present-day investigations.

An interesting passage is devoted to the subject of overtime and illustrates some very warped thinking. In the West, overtime is an attempt to enslave and overwork the masses, while in the Communist sphere, it is a means to become a "Hero of the Soviet" and to build up power.

The trade war is covered from two aspects. The first deals with the satellite countries and how they have been made so dependent on the USSR that any break would result in economic chaos or would require external financial support for up to three years while a balanced economy was reestablished. The second covers the methods of price cutting in the world markets. Since there are no private businesses that must make a profit to survive, the USSR can dump on the world market whatever is necessary to disrupt and discredit particular nations of the West.

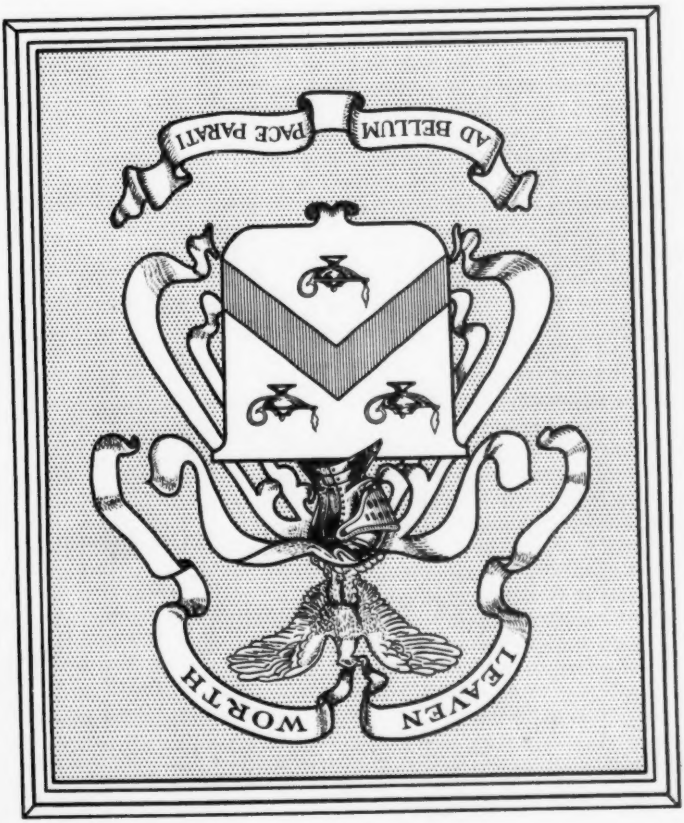
Here is a view of the nonmilitary side of the ever-present conflict which exhibits yet another face of our opponent.

MILITARY REVIEW ANNUAL AWARD

The monthly first place award articles submitted by military writers and published in the MILITARY REVIEW during the period November 1958 through October 1959 inclusive have been reviewed by a faculty committee of the U. S. Army Command and General Staff College. The following article was selected to receive the Annual Award of $350:—

Lebanon—Professionalism at Its Best,
Colonel Lynn D. Smith, General Staff
Office, Assistant Chief of Staff for Reserve Components
Department of the Army, Washington, D. C.
June 1959 issue

The other monthly award winners considered in the Annual Award competition were:

Month	*Title and Author*
November	Partisan Warfare, Model 1861-65, *Col Carl E. Grant, Chemical Corps*, U. S. Army Logistics Management Center, Fort Lee, Virginia
December	No award made for this month
January	The "Eyes" Have It, *Lt Col Mark H. Terrel, Infantry*, Faculty, U. S. Army Command and General Staff College
February	The Gran Sasso Raid, *Maj Burton F. Hood, Infantry*, Office, Deputy Chief of Staff for Operations, Department of the Army, Washington, D. C.
March	Keeping Pace With the Future—The Moral Basis for Instruction, *Col Hughes L. Ash, Infantry*, Faculty, U. S. Army Command and General Staff College
April	A New Concept for Military Organization, *Col Seymour I. Gilman, General Staff*, Headquarters, U. S. Army Air Defense Command, Colorado Springs, Colorado
May	Rear Area Security and Rear Area Damage Control, *Col Elmer G. Owens, Infantry*, Faculty, U. S. Army Command and General Staff College
July	Coordination of Fire and Maneuver on the Nuclear Battlefield, *Maj Robert M. Young, Artillery*, 8th U. S. Army
August	The Corps Support Command, *Lt Col Jerry F. Dunn, Artillery*, Student, U. S. Army War College
September	Only the Best Go North, *Maj Frank B. Case, Transportation Corps*, Headquarters, U. S. Army, Alaska
October	Unconventional Forces—The Commander's Untapped Resources, *Lt Col Frank A. Gleason, Jr., Corps of Engineers*, Faculty, U. S. Army Command and General Staff College

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